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Assessing African National Adaptation Programmes of Action: Giving a Voice to the Voiceless

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ASSESSING AFRICAN NATIONAL ADAPTATION PROGRAMMES OF ACTION: GIVING A VOICE TO THE VOICELESS

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ABSTRACT

The earth continues to experience climate change. Although it is occurring worldwide, the Least Developed Countries (LDCs) are particularly in danger from various adverse consequences due to their low adaptive capability. In order to assist LDCs prepare for climate change, the United Nations (UN) established the National Adaptation Programmes of Action (NAPAs). Part of the rationale behind the creation of the NAPAs was to help LDCs prepare for climate change effects, while protecting the poor and using sound environmental management. To date, 47 LDCs have submitted NAPAs to the UN, from which 32 are African LDCs.

Prior to this research, a gap existed in the literature determining how the NAPAs are addressing the needs of the poor and biodiversity preservation. Because the African continent has been identified as being particularly vulnerable to the effects of climate change, this research focuses on the 32 NAPAs submitted by African LDCs. The 32 African NAPAs were assessed using a matrix with criteria reflecting literature-based best practices both for adaptation plans, specifically and plans, generally. This matrix serves as an evaluative tool for the NAPAs to determine how they are addressing the needs of the poor and biodiversity preservation; it can also serve as an evaluative tool for other adaptation plans. The research reveals several implications for the UN NAPA guidelines. In order for them to better address the needs of the impoverished and biodiversity preservation, they need to further balance flexibility within the guidelines to reflect local needs and additional requirements to ensure that countries incorporate the

various methods that have been identified in the literature as best practices to address climate change.

DEDICATION

I dedicate my thesis to the two people in my life who have always encouraged me to dream and have always supported me in all my efforts. Mami y Papi, les quiero y agradezco con todo mi corazón.

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Listed last in this section, but of primary significance and of due acknowledgement is my God. The beginnings of this thesis stem from Him: His desire that we be good stewards of this earth and His concern for the poor. The work and completion of this thesis were only possible through Him. His grace has been and is all-sufficient.

I know that thou art the author and finisher of faith,
that the whole work of redemption is thine alone,
that every good work or thought found in me
is the effect of thy power and grace.

- The Valley of Vision, 1975

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INTRODUCTION

As the earth continues to experience climate change, communities and ecosystems will face numerous effects that threaten their livelihoods. This research will focus on adaptive responses to climate change in the least developed countries (LDCs) and the economic, social, and environmental implications for the communities and ecosystems in which they are implemented. In particular, National Adaptation Programmes of Action (NAPAs) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) will be evaluated to determine how they address the needs of the poor and biodiversity preservation.

Climate change affects communities in a variety of ways. In Bangladesh alone, there are 15 million inhabitants that are threatened with just one climate change consequence: rising sea levels (Pilkey & Young, 2009, p. 16). The National Research Council (2010) estimates that roughly 100 countries with a population of almost a billion people, in the poorest regions of the world, are disproportionately threatened by the impacts of climate change (p. 196). The least developed countries (and within those nations, the poor in particular) have been specifically identified as being in danger of numerous adverse consequences due to climate change (Oxfam, 2009, p. 1). These include the following:

> "diminished access to water resources as precipitation decreases; greater food insecurity due to changing weather patterns; irreversible loss of biodiversity;

increased incidence of water-borne and vector diseases as climatic zones shift; sea-level rise leading to coastal erosion and salt-water intrusion; greater incidence of flooding; and exacerbated desertification" (UNFCCC, 2002, p. 19).

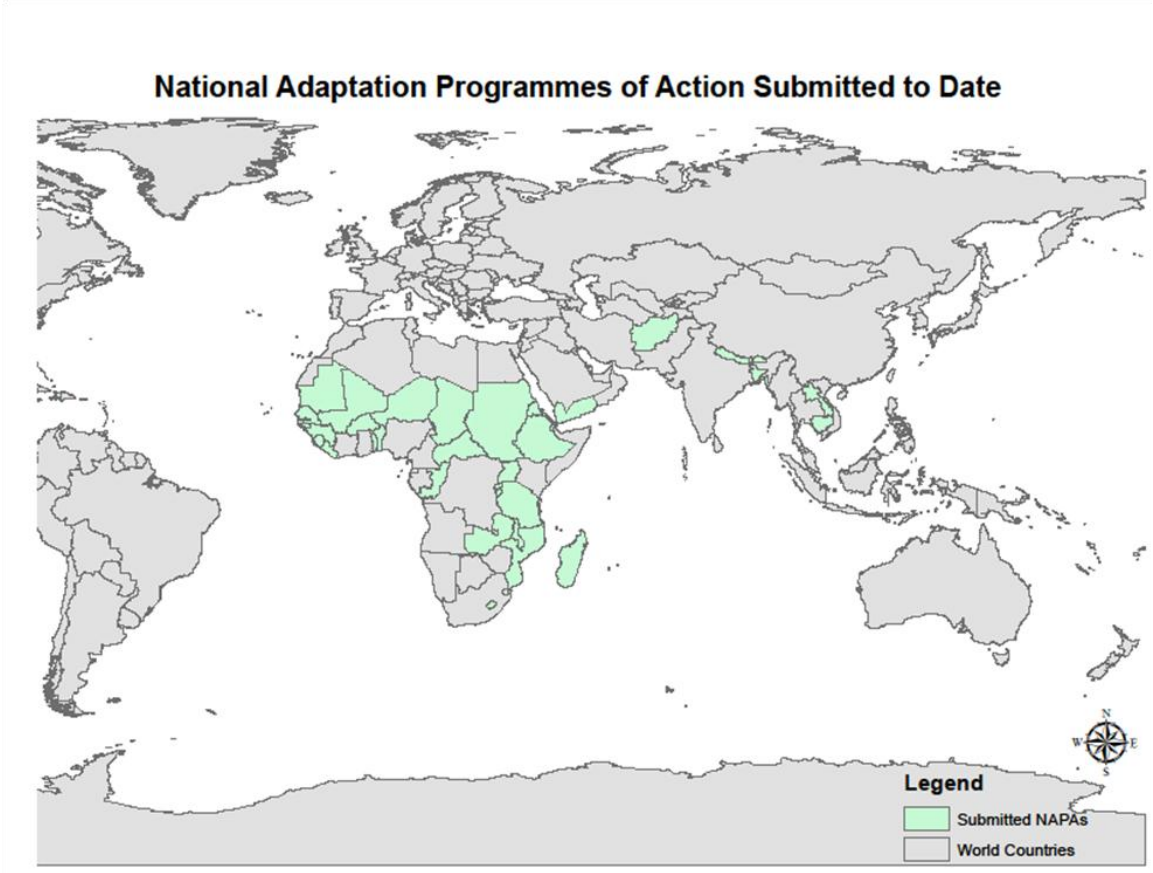
Grave consequences are also possible for the environment and the nonhuman species within these ecosystems. Climate models show that the increasing temperature will have serious effects on species' extinction rates. Some studies point to plant extinction rates of between 15 and 37 percent by 2050 (Leemans, 2010, p. 58). A similar outcome is projected for mammals, where an estimated ten to 15 percent of species may become "critically endangered or extinct" by 2050 (Leemans, 2010, p. 59). Specifically, there are habitats along shorelines that are in danger from rising sea levels. In India alone, the Sundarbans, home to the world's largest mangroves forest and home to several endangered species, including the Bengal tiger, are in jeopardy due to rising sea levels (Pilkey & Young, 2009, p. 129). Numerous other ecosystems (the environments and species that live within them) face uncertain futures as a result of climate change.

Challenged with these future possibilities, world governments and other non-governmental entities have taken steps to address climate change and its effects. Although there have been numerous practitioners on climate change, the field of climate change remains uncertain, "poorly defined and rapidly evolving" (Hansen & Hoffman, 2011, p. 2). The Intergovernmental Panel on Climate Change (IPCCa, 2007) defines climate change as "a change in the state of the climate that can be identified

(e.g. using statistical tests) by changes in the mean and/or the variability of its properties," "that persists for an extended period, typically decades or longer," and is attributed both to natural variability and human activity (IPCCa, 2007). While this definition of climate change includes both changes due to natural variability and human activity, the UNFCCC defines climate change as that which is attributed directly or indirectly to human activity above what is seen as a result of natural variability (IPCCa, 2007). This second definition focuses on change attributed to human activity. Either way, there is evidence of changes to the earth's climate, and steps have been taken to address these changes.

There are two ways to respond to climate change: adapting to its impacts and mitigating through the reduction of greenhouse gas emissions. The term "adaptation" first emerged in 1992 at the United Nations Framework Convention on Climate Change (Hansen & Hoffman, 2011, p. 2). Adaptation has since then been defined as the strategies and activities that enable people, individually or in groups (communities, governments, etc.) to "accommodate," "cope with," "adjust to," or "reduce" the adverse effects of climate change (Nyong, Adesina, Osman-Elasha, 2007, p. 791; UNFCCC, 2002, p. 19). Blanco and Alberti (2009) further define adaptation as the "context of vulnerability, sensitivity and adaptive capacity" (p. 159). These additional terms of vulnerability and sensitivity are important for the strategies and activities chosen to cope with the effects of climate change and will be addressed in more detail further in the literature review.

National Adaptation Programmes of Action (NAPAs) have been developed as one strategy for Least Developed Countries (LDCs) to cope with and reduce the adverse effects of climate change. Least Developed Countries have the lowest socioeconomic status of countries around the world and face humanitarian challenges that are intensified with threats of climate change. In addition to the humanitarian challenges, these countries are also home to rich ecosystems that are not only valuable for their innate worth, but they are also sources for the survival of the individuals of these countries. Since the establishment of NAPAs in 2001, 47 out of 48 LDCs have submitted programmes to the United Nations (See Figure 1). Thirty-two of these are from African countries. The International Panel on Climate Change (IPCC) has identified the continent of Africa as being particularly, if not the most, vulnerable to the effects of climate change (IPCCc, 2007). Consequently, this thesis will assess all of the African LDCs programmes to see how they are addressing the needs of the poor and biodiversity preservation within the African continent.



Source: United Nations

Figure 1: National Adaptation Programmes of Action Submitted to Date

LITERATURE REVIEW

Global Climate Change Science

Before reviewing and identifying the plans' proposed methods and actions to cope with the adverse effects of climate change, an understanding of global climate change is necessary. To improve knowledge of global climate change, the Intergovernmental Panel on Climate Change (IPCC) was established in 1988 with the purpose of assessing "available scientific information on climate change, [evaluating] the environmental and societal impacts of climate change, and [formulating] response

strategies" (Santer and Wigley, 2010, p. 28). The IPCC's 2007 report shows that there are changes to the climate, including evidence increasing global and continental temperature change, extremes in temperature and wind patterns, and instances of drought and extreme precipitation. These changes evince a rise in the number of major floods, droughts, heat waves, and wildfires (Holdren, 2010, p. 2).

The world has already experienced more subtle climate changes, according to the IPCC's Fourth Assessment Report. First, concentrations of greenhouse gases have significantly increased: carbon dioxide has augmented from 280 parts per million (pre-industrial rate) to 379 parts per million in 2005 (IPCCb, 2007, p. 2 and 3). The rise in levels of carbon dioxide concentrations is attributed to fossil fuel use (though land use is also responsible), whereas the increase seen in methane and nitrous oxide is primarily caused by agriculture (IPCCb, 2007, p. 2 and 3). The report also states that, since 1850, eleven of twelve years between 1995 and 2006 were some of the warmest years in the record of global surface temperature (IPCCb, 2007, p. 5). A National Aeronautics and Space Administration analysis is further evidence of warm temperatures, showing that 2009 was the second warmest year on record and that January 2000 to December 2009 was the warmest decade on record (since recordkeeping began) (National Aeronautics and Space Administration, 2009). Changes in ocean surface and atmospheric temperatures have also been detected (IPCCb, 2007, p. 10). The earth is experiencing increased sea level rise, attributed both to oceans absorbing heat, causing water to expand, as well as the melting of mountain glaciers and snow, increasing water volumes

(IPCCb, 2007, p. 5; Church & White, 2006, p. 1; Oliver-Smith, 2009). Furthermore, the Greenland Ice Sheet is expected to contract, also adding to the volume of water and contributing to sea level change (IPCCb, 2007, p. 17).

It is important to note that the findings presented by the IPCC are conservative. The IPCC is a body made up of 194 member countries. Thousands of scientists participate in the preparation of reports issued by the body. All members must reach consensus before reporting; consequently, the IPCC chooses to predict and state findings on the conservative side. Additionally, the IPCC omitted glacial ice melt in its 2007 projections, underestimating the sea level rise volume and pace.

Changes in precipitation have also been observed and recorded. While increased precipitation has been seen in parts of North and South America, northern Europe and northern and central Asia, the Mediterranean, parts of the Sahel, and southern Africa have experienced little precipitation and are facing periods of drought (National Research Councilb, 2010, pp. 28, 48; IPCCb, 2007, p. 7). Changes in precipitation are not uniform throughout the world, and they vary with continents. For example, in eastern Africa, the northern sector has seen an increase in the amount of rainfall, while the southern sector has seen a decrease (IPCCc, 2007, 9.2.1). These differences point to the importance of regional studies and data gathering to understand regional characteristics and to know how to prepare regionally.

The IPCC also states that it is likely that there will be more intense tropical cyclones (IPCCb, 2007, p. 15). Additionally, records show that there have been fewer

days of intense cold and frost, while there have been more days and nights of heat (National Research Councilb, 2010, p. 28; IPCCb, 2007, p. 8). The continent of Africa has been identified as being the most vulnerable to climate change (IPCCc, 2007, p. 19.3.3; Huq, S., Rahman, A., Konate, M., Sokona, Y., & Reid, H., 2003, p. 12). This is caused in part by its lower latitudes, where climate change impacts are more intense (such as "increased disease and extreme heat and drought") (Burton, Diringer, Smith, 2006, p. 4). The IPCC cites to reports that show that western and southern Africa has seen increased occurrences of warmer days (seen since 1960 through 2000) (IPCCc, 2007, p. 9.2.1). Increased heat and other climate change effects present several vulnerabilities to the African continent, including reductions in agricultural productivity and water shortages, both resulting in increased risks for health and increased incidences of illness (IPCCc, 2007, p. 19.3.3; Huq, S. Rahman, A., Konate, M., Sokona, Y., & Reid, H., 2003, p. 13). In addition to vulnerabilities faced by the populations in Africa, there are an estimated one billion people at risk of reduced water supplies in South, South East and East Asia (IPCC, 2007, p. 19.3.3). The majority of Least Developed Countries are located in the continent of Africa, with the others primarily in Asia. That compounds the need for national plans that address these vulnerabilities in the LDCs. Furthermore, the IPCC's report also states that the increased changes in land use, as well as climate change will each affect levels of biodiversity (National Research Councilb, 2010, p. 52; IPCCc, 2007, p. 19.3.3).

These are just some of the disturbing characteristics of the state of our globe. Possibly even more troubling is the fact that according to the IPCC, even if

concentrations of greenhouse gases and aerosols are kept at 2000 year levels, models show that there will be continued warming of 0.1 degrees Celsius per decade (IPCCb, 2007, p. 12); this is attributed to the slow response of oceans. Warming reduces the amount of carbon dioxide that can be absorbed by land and oceans, resulting in higher concentrations in the atmosphere (IPCCb, 2007, p. 13). As a result, humankind is faced with climate change and must respond to these changes.

Responses to Climate Change

Mitigation and Adaptation

Two strategies can be taken to counter climate change. Mitigation for climate change refers to the strategies taken to lessen impacts by reducing the "atmospheric concentrations of carbon dioxide and other greenhouse gases" (Randolph, 2004, p. 202; Zinn, 2007, p. 1). Adaptation "refers to human actions taken to limit the negative or take advantage of the positive effects of climate change" and can be both proactive as well as reactive (Hansen & Hoffman, 2011, p. 4). Adaptation includes all the strategies taken by individuals and groups to cope with the effects of climate change (Nyong, Adesina, Osman-Elasha, 2007, p. 791; UNFCCC, 2002, p. 19).

There are several differences between adaptation and mitigation. One of the differences pointed out by Blanco and Alberti (2009) is that, unlike assessments that evaluate mitigation strategies, relying on the physical and biological sciences, assessments evaluating adaptation strategies focus on "economic and social variables in a local development context" (p. 164). The emphasis to the physical and biological

sciences, as given by mitigation strategies, seems to be reinforced by arguments stating that mitigation is “far too socially costly or simply infeasible” (Zinn, 2007, p. 1).

Evidence of climate change, and the lack of adequate results from mitigation efforts, point to the importance for adaptation (Blanco & Alberti, 2009, p. 158). Nevertheless, adaptation and mitigation are both means of addressing climate change and are not antithetical; rather, they are complimentary and should be carried out simultaneously (Blanco & Alberti, 2009, p. 156). Adaptation methods are more effective when effective mitigation steps have been implemented (Hansen & Hoffman, 2011, p. 4). Even stringent mitigation strategies alone will not be able to reverse the warming of the earth; they can only moderate the warming (Zinn, 2007, p. 2). Consequently, adaptation will be necessary. The discussion is best focused on the necessary mitigation and adaptation measures that should take place (Zinn, 2007, p. 2). It is important not to develop strategies that are solely reliant on adaptation, because policies that are “adaptation-preferring” have the risk of creating “adverse environmental impacts” that would accentuate the effects of climate change (Zinn, 2007, p. 2). For instance, in building dams to make up for water lost to shrinking snow packs, habitats for numerous species that reside in the waterway can be destroyed (Zinn, 2007, p. 2). Zinn argues for a balance between adaptation and mitigation (the two types of policies and responses to climate change).

Resilience and Vulnerability

The two responses to climate change must likewise take into account two important concepts: resilience and vulnerability. Resilience is defined as "the capacity to buffer change, learn and develop" as well as a "measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (Folke, Carpenter, Elmqvist, Gunderson, Holling, & Walker, 2002, p. 437; Holling, 1973, p. 14). Stability, on the other hand, refers to the "ability of a system to return to an equilibrium state after a temporary disturbance" (Holling, 1973, p. 17). The more rapidly a system returns to equilibrium (with the least amount of fluctuation), the more stable it is (Holling, 1973, p. 17). Systems can be resilient but be very unstable. "Climatically buffered, fairly homogeneous and self-contained systems with relatively low variability" tend to have high stability but low resilience (Holling, 1973, p. 18). An important strategy is, therefore, not one that maximizes efficiency but one which allows for flexibility (Hansen & Hoffman, 2011, p. 38; Holling, 1973, p. 18).

Resilience consists of latitude, resistance, precariousness, and panarchy. While latitude refers to the maximum amount of change a system can face before it reaches a point where it cannot recover, resistance refers to the ease or difficulty for a system to change (Walker, Holling, Carpenter, and Kinzig, 2004, p. 2). Precariousness, on the other hand, is the closeness of a system to its limit, while panarchy refers to the relationship between a system and other systems or conditions (for example, the resilience of a

system is linked in part to the political conditions of the area) (Walker, Holling, Carpenter, and Kinzig, 2004, p. 3). “The possibility of unanticipated or massive changes in climatic and biotic systems underlines the need for a combination of specific adaptations to known threats and general resilience-building for both natural and human communities” (Hansen & Hoffman, 2011, p. 21). Resilience plays an important role in biodiversity preservation and protection of the impoverished in the face of climate change.

Although all species have some level of vulnerability, species targeted for biodiversity preservation and the impoverished have greater vulnerability. “Vulnerability is a measure of [a system’s] capacity to deal with shocks. Greater vulnerability means less capacity to deal with shocks without suffering a long-term loss of wellbeing” (Oxfam, 2009, p. 7). Furthermore, the IPCC (2007) defines vulnerability as “the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes.” Vulnerability is composed of two factors: “the susceptibility of natural and human systems to environmental changes, and . . . their resilience” (Mimura, 1999, p. 141). Vulnerability, therefore, can be addressed with measures that increase resilience and the capacity of systems to persist and absorb change. Adaptation includes measures that allow systems and humans to be more resilient and less vulnerable.

Biodiversity Preservation

One way to establish resilience is through the preservation of biodiversity (Folke, Carpenter, Elmqvist, Gunderson, Holling, & Walker, 2002, p. 437). Biodiversity "generally refers to the diverse forms into which organisms have evolved" (Gunningham and Young, 1997). There are three types of biodiversity: genetic, species and ecosystem (Zinn, 1997). Each of these is important for various reasons including provision of food, medicine, and natural ecosystem processes (such as groundwater recharge). These reasons point to the importance of biodiversity as the "primary source for fulfillment of humanity's needs . . . provid[ing] a basis for adaptation to changing environments" (Gunningham and Young, 1997). Biodiversity maintains environmental resilience, and when ecosystems and communities are faced with threats due to (among other things) climate change, it is all the more important to preserve biodiversity. Once biodiversity is lost, it is expensive and challenging to bring back the genes, species or ecosystems.

Current practice for biodiversity preservation has been developed based on assumptions that resources and habitats will continue to be available (as they have been up to the present) (Hansen & Hoffman, 2011, p. 27). Climate change, however, means that there is no longer a "relatively stable" variability from year to year in the climate system (Hansen & Hoffman, 2011, p. 27). Current resource conservation and management programs need account for these changing realities.

Even though biodiversity is important for the resilience of systems, biodiversity faces numerous threats from climate change and its associated variability (Heller &

Zavaleta, 2009, p. 15). Both atmospheric increases of carbon dioxide and the destruction of habitats pose challenges to biodiversity maintenance (Heller & Zavaleta, 2009, p. 15; Beatley, 2000, p. 5). Although urbanization drives habitat loss, natural events (flood, drought, desertification, etc.) affect habitats, and these events are occurring more frequently with climate change (Beatley, 2000, p. 6; Hilty, J.A., Lidicker Jr., W.Z. & Merenlender, A.M., 2006; IPCCc, 2007). In order to preserve biodiversity, habitats must be kept intact and connected (Beatley, 2000, p. 8). And the climate change adaptation plans should include planning that protects habitat corridors and linkages. The preservation of biodiversity is a "very successful mitigation strategy," thus NAPAs should include discussion and clear steps on how this would be protected (Nyong, Adesina, and Osman-Elasha, 2007, p. 793). Given the extinction threats for numerous species, it is important that adaptation plans be focused "not only on maintaining, but also trying to enhance resilience of these species and ecosystems" (Leemans, 2010, p. 62).

Preserving the ability of species to move across habitats plays a critical role in preserving biodiversity (Hansen & Hoffman, 2011, p. 136; Hilty, J.A., Lidicker Jr., W.Z. & Merenlender, A.M., 2006; Damschen, E.I., Haddad, N.M., Orrock, J.L., Tewksbury, J.J. & Levey, D.J., 2006, p. 1286). Corridors, which are defined as "any space, usually linear in shape, that improves the ability of organisms to move among patches of their habitat," provide connectivity necessary for numerous natural processes (Hilty, J.A., Lidicker Jr., W.Z. & Merenlender, A.M., 2006). Connectivity supports essential processes for the

overall health of an ecosystem (e.g. supporting genetic mixing through pollination), supports resilience by providing a way for species to spread into new ranges (something that occurred dramatically during past climate change events), supports genetic mixing (increasing the possibility that species evolve in ways that will make them better suited for climate change), and supports species recovery after natural disaster events that eliminate a large population of the species (those of the same species that reside in a different location can move to the devastated area to repopulate the species) (Hansen & Hoffman, 2011, pp. 137-138; Hilty, J.A., Lidicker Jr., W.Z. & Merenlender, A.M., 2006).

The preservation and promotion of corridors does create areas that allow species to shift in ranges. This, too, is important to the preservation of biodiversity in face of climate change. Studies show that species' ranges shift in response to climate change, as species seek their preferred climatic conditions (Hannah, 2009, p. 71; Wiens & Bachelet, 2009, p. 52). Hannah (2009) argues for four methods to protect species' ranges. Compensatory protection makes up for loss of protection for individual species due to range shifts (p. 72). Restoration provides future habitats or connectivity pathways to species that have suffered consequences of climate change impacts (Hannah, 2009, p. 72). Spatially variable protection will account for species' shifts in ranges (Hannah, 2009, p. 72). Disease and pest refuge protection will provide areas that are naturally sheltered from disease and pests in order to provide a haven for species to recover after adverse impacts (Hannah, 2009, p. 72; Hilty, J.A., Lidicker Jr., W.Z. & Merenlender, A.M., 2006). Hilty, Lidicker and Merenlender (2006) concur with this last

method, stating that one successful action to manage species survival is the control of "deleterious predators or parasites" (Hilty, J.A., Lidicker Jr., W.Z. & Merenlender, A.M.). At the same time, a balance must be obtained in the amount of connectivity since habitats that are extremely connected can conversely limit biodiversity by permitting dominant competitors and predators to overshadow other species (Kneitel, J.M. & Miller, T.E., 2003, p. 169). Nevertheless, preservation of the ranges of species should be sought in order to support biodiversity.

In order for policies to promote biodiversity, they must have several characteristics. Policies need to be "informational, educational, voluntary, price-based, property right and institutional" (Gunningham and Young, 1997). An important component to keep in mind when developing policies that promote biodiversity in Least Developed Countries is that they balance the importance of both the biosphere and the "prosperous development of society" (Folke, Carpenter, Elmqvist, Gunderson, Holling, & Walker, 2002, p. 439). The economies of LDCs are "largely agrarian," making the relationship between the ecosystem, the economy, and the well-being of these populations even stronger (UN-OHRLLS, 2012). The health of the ecosystem will affect the well being of the human population that resides in it; conversely, the actions taken by humans will affect the health of the ecosystem. Policies should "strengthen the perception of humanity and nature as interdependent" (Folke, Carpenter, Elmqvist, Gunderson, Holling, & Walker, 2002, p. 439). Additionally, effective policy for biodiversity should have the following characteristics. Policy must be "design[ed] for

precaution" (Gunningham & Young, 1997). Policy should not solely rely on regulation, but should instead be a mixture of strategies that would ensure that if one strategy fails, the other(s) would still be present as options to ensure that biodiversity is not lost.

Furthermore, it is important to reduce the underlying causes that threaten biodiversity. Gunningham & Young (1997) argue that taking away these underlying causes in turn reduces any incentive that people may have had to harm biodiversity because there is no longer a pressure that encourages people to act to harm biodiversity.

It is also important to mix institutions and encourage participation when conserving for biodiversity. This "mixing" of institutions refers to the need to include both the highest levels of government with local governments, as well as the need to include the community, in general and even industrial sectors (Gunningham & Young, 1997; Folke, Carpenter, Elmqvist, Gunderson, Holling, & Walker, 2002, p. 440). Having a wide array of players involved in biodiversity preservation encourages accountability and effectiveness.

Additionally, the Tinbergen Principle should be followed to address biodiversity conservation. This principle states that at least one policy instrument should be used to address each specific threat or objective (Gunningham and Young, 1997). By addressing specific threats or objectives, it may also be easier to monitor specific ecosystem variables, which is also important to include in policy that supports biodiversity (Folke,

Carpenter, Elmqvist, Gunderson, Holling, & Walker, 2002, p. 440). The implementation of these principles will encourage the preservation of biodiversity in policies.

Protecting the Impoverished

Climate change can also have serious implications for the development of Least Developed Countries (LDCs), which are the most vulnerable to the effects of climate change and have the least capacity to respond to these effects (Hardee & Mutunga, 2010, p. 114; Huq, S., Rahman, A., Konate, M., Sokona, Y., & Reid, H., 2003, p. 6). LDCs have the least adaptive capacity because they do not have the resources or technologies needed as other developed countries (Blanco & Alberti, 2009, p. 159). Furthermore, within the least developed countries, the poor are "the most vulnerable and in need of protection" (UNFCCC, 2002, p. 1; Ayers and Huq, 2008, p. 1).

Changes in climate, rainfall, climate-related diseases, etc., can have direct impacts on the residents in these nations and on their livelihoods (UNFCCC, 2002, p. 20). Although the international community has been partnering to reach the Millennium Development Goals (MDGs) established in 2000, there is the risk that climate change will undermine the work that has already taken place, resulting in a setback from poverty and alleviation (Oxfam, 2009, p. 2). Poor people are more exposed to the negative effects of climate change related events, such as droughts, floods, sickness, desertification, sea-level rise, and changes in rainfall altering agricultural growth patterns (Oxfam, 2009, p. 5). Oxfam states that an insufficient amount of international attention has been given to the effects of climate change on the poor; more attention

has been given to the environmental impacts (Oxfam, 2009, p. 7). Yet it is the poor that remain most vulnerable.

There are various reasons why it is stated that "[vulnerability] is inextricably linked with poverty" (Oxfam, 2009, p. 7). The poor do not rely on extra income or insurance. Instead, when faced with "shocks," they are forced to go without food, or forced to stop working, or forced to take their children out of school (Oxfam, 2009, p. 7). The economies of the LDCs rely heavily on climate-sensitive sectors (including tourism, agriculture, and fisheries), making the impacts of climate change particularly high for the poor in these nations (those who rely heavily on these sectors), and making them more vulnerable to these effects (UNFCCC, 2011, p. 12). One direct example of how ignoring the need to invest in adaptation can result in great economic loss is evidenced in models assessing Hurricane Mitch's impact in Honduras (1998), which show that the hurricane reduced the nation's GDP by 6-8 percent from what it had been projected to be by 2004 (Oxfam, 2009, p. 9). This, in turn, is translated to a greater number of people becoming and/or remaining in poverty (Oxfam, 2009, p. 9). The economic benefits of investing time, funds and resources in adaptation, therefore, can be significant.

The effects of climate change on the impoverished are not only linked to income and economies. The poor face additional stressors as a result of climate change. Many of these potential stressors are related to water – both its quality and quantity (Hansen & Hoffman, 2011, p. 13). In regards to quantity, populations will be faced with both

water overabundance and water shortages. Adequate availability of food is already tenuous due to rapidly growing populations, soil conditions, etc., which is only being further challenged by changes in temperature and precipitation, both of which have the likelihood of affecting crop yields (National Research Council, 2010, p. 187). It is estimated that by 2020, agricultural yields in some African countries will decrease by 50% as a result of precipitation changes (IPCC, 2007), resulting in even more famine and policy challenges. The IPCC's 1995 report states that in addition to droughts, communities will be faced with more incidences of and damages due to floods. While flood risks are possibly the climate change effects with "greatest implications for human well-being," there have been few studies conducted on the possibility of increased chances of floods due to climate change; this is largely due to the limited amount of regional data available on precipitation (Gleick, 2010, p. 77). The fact that there have been few studies conducted does not negate the reality that communities around the world will be faced with floods. The poor, whose housing infrastructure and whose household incomes are already challenged will be even less prepared to face floods.

In addition to climate change effects on water quantity, climate change will have impacts on the alteration of water quality through changes in "temperatures, flows, run-off rates and timing, and the ability of watersheds to assimilate wastes and pollutants" (Gleick, 2010, p. 75). A concern exists as to the amount of safe water that will be available to meet the needs of populations as well as agriculture (National Research Council, 2010, p. 187). Water quality depends on several factors, including "the

interaction of climate change, land-use and agricultural practices, regulatory measures, and technical advances" (Gleick, 2010, p. 75). As a result, it is necessary to address these factors in adaptation plans in order to effectively plan for the effects of climate change on water. An additional contributor to diminished water quality is linked to sea level rise. The amount of salt-water intrusion onto coastal aquifers will result in poor water quality (Gleick, 2010, p. 76; Mimura, 1999, p. 140). Around the globe, the poor are already faced with challenges pertaining to access to clean and safe drinking water. The effects of climate change on water quality will only exacerbate these challenges. Unfortunately, current policies addressing water and water management are often "contradictory, inefficient, or unresponsive to changing conditions;" this means that "societal costs of water problems are likely to rise as competition for water grows and supply and demand conditions change" (Gleick, 2010, p. 79).

Water quality, as well as other effects of climate change will impact public health, where the poor are especially vulnerable. Health impacts related to climate change include the increased incidence of extreme weather, causing increased occurrences of heat waves, food shortages from droughts and waterborne and other climate-sensitive diseases (National Research Council, 2010, p. 70; UNFCCC, 2011, p. 15). The poor, who are already more vulnerable to disease, illness and the effects of natural disaster are only faced with more dire future health consequences as a result of climate change. Climate change's effects on the intensity and propensity for infectious diseases,

as well as malnutrition, will only further delay the achievement of development goals established for least developed countries (National Research Council, 2010, p. 187).

Within LDCs and among the poor, those that live within the coastal regions face additional risks. Pilkey and Young (2009) argue that of all the ongoing and unexpected results of climate change, sea level rise will be the "most immediate, the most certain, the most widespread, and the most economically visible in its effects" (p. 4). When considering the numerous communities around the world that have settled in coastal regions, some of these risks are magnified (Mimura, 1999, p. 137; Oliver-Smith, 2009, p. 9). Roughly 600 million people reside in coastal communities around the world (Oliver-Smith, 2009, p. 9). In a study of several South Pacific islands, the vulnerability of coastal populations became more pronounced as a result of several factors. For one, the capital cities of the countries in study were located on the coast, increasing the numbers that could be affected by the effects of sea level rise (Mimura, 1999, p. 139; Oliver-Smith, 2009, p. 9). While there are regions in the world that are already taking steps to relocate populations away from the coast (in Alaska, Inupiat Eskimos are being moved to the mainland; in Colombia, buildings and even entire villages are regularly moved further inland because sea level rise and sinking ground occurs rapidly; in South Carolina, the state policy is to retreat from the shoreline) (Pilkey & Young, 2009, p. 3), in other parts of the world, numerous migrant communities have further moved onto low-lying and coastal land since this is the only land that is affordable and available to

migrants (Mimura, 1999, p. 139). This reality places the most vulnerable at the most risk for threats from gradual sea level rise and storm events.

Merely removing populations from the coast, however, is not that simple, because often these populations make their living off of the ocean and coast. Removing them means taking away their means of sustenance, as well as their cultural identity. Governments and communities must be prepared, lest the displacement of these populations result in permanent refugee camps and populations dependent on the resources of governments and organizations (Oliver-Smith, 2009, p. 41). While some communities have successfully been able to move further inland when faced with rising sea level, some communities have been inadequately resettled, resulting in a "secondary disaster" (homelessness, unemployment, dislocation, adaptive stresses, food insecurity, etc.), while other communities simply have nowhere to go (Oliver-Smith, 2009, p. 41).

The numerous coral atoll nations, mainly in the South Pacific, are on the top of the list of nations in danger of sea level rise with nowhere to go (Pilkey & Young, 2009, p. 16). These small islands are located at great distances from each other and from larger landmasses (Pilkey & Young, 2009, p. 16). Most of these islands also have economies based on subsistence, making their response to sea level rise more difficult (Pilkey & Young, 2009, p. 16; Barnett, 2001, p.980). Moving these communities from their islands is additionally contentious because it means the nations lose their sovereignty and their cultures, their sense of cohesion, and their social ties (Oliver-

Smith, 2009, p. 41; Pilkey & Young, 2009, p. 17; IPCCc, 2007). Yet these islands already face threats to their survival. Storm surges have resulted in island flooding destroying fruit trees, and sometimes leaving coconut trees as the only source of nourishment for the communities (Pilkey & Young, 2009, p. 18). If, or when, communities are relocated, governments are faced with the question of how to prepare for these environmental refugees, and how to prepare the refugees in order to help them assimilate into their new way of life.

Adaptation Planning Process

General Recommendations

The probable effects of climate change threatening biodiversity and the impoverished point to the importance of developing adaptation plans for climate change. Its importance cannot be overstated, yet "research in climate change adaptation is still in a formative state" and research on adaptation methods is "very sparse" (Blanco & Alberti, 2009, p. 163). There are still few climate change adaptation plans that have actually been implemented around the world (National Research Council, 2010, p. 76). This reality makes it difficult to evaluate their effectiveness. Nevertheless, there are adaptation activities from which lessons and implications for plan development can be obtained (National Research Council, 2010, p. 76).

Although adaptation planning is still nascent, there are several characteristics being postulated as best practice. First, adaptation plans should be comprehensive, covering multiple facets (Blanco & Alberti, 2009, p. 155). These various parts of

successful adaptation plans include philosophy, governance and management, science, and clear goals (Hansen & Hoffman, 2011, p. 35). When developing adaptation plans, it is important to understand that information is incomplete, and, consequently, plans will not "[get] it right the first time" (Hansen & Hoffman, 2011, p. 35). Instead, it is essential to have a philosophy of learning while implementing strategies and recognizing vulnerabilities (Hansen & Hoffman, 2011, p. 35). It is not only vital to simply recognize vulnerabilities but also prepare adaptation plans that address these vulnerabilities (Hansen & Hoffman, 2011, p. 36). "Local and regional impact projections are necessary to begin to determine a region's vulnerability" (Blanco & Alberti, 2009, p. 160). In order to develop local and regional impact projections, data must be gathered and available on regional precipitation patterns, coastal characteristics, geomorphology, weather patterns, etc. (Blanco & Alberti, 2009, p. 160). Regional models can then incorporate this data and compare it to global models to obtain a better understanding of a region's vulnerabilities, and thus identify the problem (the first step in the planning process).

Once vulnerabilities are determined through the assessment of local and regional science, stakeholder participation is needed to develop a clear vision and goals (Hansen & Hoffman, 2011, p. 36). Although adaptation planning can occur at the community, system or project scale (Blanco & Alberti, 2009, p. 164), it is important to develop a clear vision and goals, and these can be best developed through a participatory method (Brody, 2003a, p. 191; Innes, 1996, p. 469). Planning for climate change can occur both at the community level and at the sectoral level (Blanco &

Alberti, 2009, p. 166). The sectoral level is especially beneficial since there are numerous and specific sectors that will be affected by the effects of climate change. These sectors include transportation, public health, energy, water, environment, etc. It can therefore be important and advantageous to have input from these sectors when determining the vision and goals for the plans.

Although input from these formal sectors is important to determine a vision and goals for the plans, it is also important to include input from other stakeholders in the community. Adaptation plans can be greatly strengthened through stakeholder input resulting in combinations of empirical data with local knowledge (Hansen & Hoffman, 2011, p. 112). Stakeholder involvement should specifically include input from the indigenous. For the most part, indigenous knowledge and practice follows a sustainability model of Economy, Equity and the Environment (Nyong, Adesina, and Osman-Elasha, 2007, p. 794). It is also observed that indigenous knowledge aligns more and more with scientific methods and are being recognized as effective and advantageous to follow (Nyong, Adesina, and Osman-Elasha, 2007, p. 794). In addition to the need to specifically include input from the indigenous, stakeholder participation should particularly include participation by women. Women's input is of great value since women hold a lot of "vital local and traditional knowledge" (UNFCCC, 2002, p. 3). Yet, the social structures in many countries still exclude women and young children from community input and decision-making opportunities (Kalame, Kudejira, and Nkem, 2010, p. 541). Nevertheless, participatory approaches yield benefits, including providing

valuable insight from the local community and various parties, as well as "allow[ing] the intended beneficiaries to develop the skills and practices necessary to forge their own path and sustain the projects" (Nyong, Adesina, and Osman-Elasha, 2007, p. 795). Furthermore, sessions where stakeholder feedback is sought from all those involved allows exchange of ideas and knowledge, and provides an opportunity to inform the stakeholders of the challenges to be faced with climate change.

Local people and governments often have knowledge that is beneficial for the development of adaptation plans (UNFCCC, 2002, p. 21). While developing countries frequently do not have detailed data (maps, climate history, etc.) necessary to assess their vulnerability to climate change, this information can be supplemented by local knowledge, since the local population has observed the environment and its changes across generations (Mimura, 1999, p. 138). Adaptation plans can combine knowledge and expertise from the scientific sector (hard data, research, etc.), as well as from the indigenous and local populations in countries (Nyong, Adesina, and Osman-Elasha, 2007, p. 788). The combination of both could lead to best practices that are country-specific and effective. Unfortunately, adaptation plans (their development and implementation) are funded by outside aid channels, which, according to Oxfam, means that the plans and their priorities are not based on local desires (even if community participation is encouraged); rather they are based on donor priorities (Oxfam, 2009, p. 12).

Nevertheless, local context and input are vital to developing adaptation plans. Preston, Westaway, and Yuen (2010) warn against the danger of producing plans that

are highly bureaucratic and do not respond to the local needs and situation (p. 427). Instead, plans can counteract this risk with a participatory process that engages the community and government alike, so that different levels of society take part in the development of plans (Preston, Westaway, and Yuen, 2010, p. 427). Not only is there benefit from local knowledge (coupled with expert knowledge), but also when plans are developed in a participatory method, there is greater local support for the final plan, greater understanding by the community and greater communication to the community (Preston, Westaway, and Yuen, 2010, p. 427), all of which improve a plan's effectiveness.

Stakeholder participation also contributes to a plan's implementation and monitoring. Berke, Godschalk, and Kaiser (2006) state that when plans do not include "provisions for monitoring the degree to which goals are achieved," the resulting plan is one that is not "high-quality" (p. 75). The quality of plans can be enhanced through the inclusion of specific and measureable objectives, indicators of success, and timelines (Berke, Godschalk, and Kaiser, 2006, p. 77). Both of these steps in plan development, implementation and monitoring, are crucial to the quality of plans and are greatly enhanced through stakeholder participation (Hansen & Hoffman, 2011, p. 201; National Research Council, 2010, p. 67). Not only can stakeholders provide additional information that may make the plans more effective, they also help in monitoring the plans once implemented. Monitoring is essential to dealing with the high uncertainty involved with climate change, human responses to change, and effective adaptation

management techniques (Hansen & Hoffman, 2011, p. 114). Monitoring of adaptation strategies is as important as is stakeholders' participation during their development, since this level of participation builds support for the programs once they are implemented through the creation a sense of ownership as well as the "weaving" of community core values into the programs (Hansen & Hoffman, 2011, p. 74 and 77; Brody(c), 2003, p. 409; Innes, 1996).

In addition to clearly identifying the problem (vulnerabilities) and obtaining broad stakeholder participation, effective adaptation plans should refer to and learn from current resource management and conservation strategies (Hansen & Hoffman, 2011, p. 4). Some scholars state that the field of adaptation to climate change does not have a "formal discipline" nor a "reverential literature," rather, it is a field that has been developed from the "top down," almost by "edict" by the IPCC and the UN (Hansen & Hoffman, 2011, p. 4). Furthermore, Zerner and Colfer (as cited in Armitage, D., Berkes, F. & Doubleday, N., 2007, p. 1) have found that such "top down" management results in increased vulnerability of communities that depend on resources. This presents a challenge as effective techniques are sought, and it is why plans should refer to and learn from current resource management and conservation strategies that incorporate input from indigenous communities.

Several characteristics from resource management and conservation strategies can be incorporated into adaptation plans. Current conservation strategies are "temporal, kinetic, and forward-thinking;" characteristics, which can be incorporated

into adaptation plans (Hansen & Hoffman, 2011, p. 32). Climate change is affecting species and their environments in such a way that it is no longer possible to restore all habitats to their pre-climate change state. The types of species and environments being affected are unique and may demand variable management systems. As such, plans should be developed with a forward-thinking perspective, and resource management strategies should be selected from a "broad, diverse set of 'tools'" (Charles, 2007, p. 85). Furthermore, climate change cannot be stopped and will continue, so plans cannot be solely developed for effects occurring in the short-run. Rather, they should have a long-term focus and provide strategies for various points within the future (Beatley, 2000, p. 7; Hansen & Hoffman, 2011, p. 32). Climate change is also characterized with variability, requiring that plans be "kinetic," including "ranges of possible futures and ranges of acceptable outcomes" (Hansen & Hoffman, 2011, p. 32). Furthermore, the reality of limited resources (both financial and political/institutional) in developing countries makes it more imperative to determine acceptable ranges and outcome. While some posit that management techniques could be focused on investments in conservation of biodiversity for high-risk areas while leaving lower-risk areas to later intervention (Sierra, 2006, p. 225), others state that conservation strategies should "get ahead of the curve" and take preservation steps before species fall into the "high-risk" category (Beatley, 2000, p. 7). Because of the variability in climate change effects, there are numerous possibilities for the future, and plans should be flexible enough to

accommodate possible habitat outcomes and identify protection strategies, regardless of which species remain in these habitats (Hansen & Hoffman, 2011, p. 33).

Another important component of conservation strategies that should be incorporated into adaptation plans is that of connectivity to preserve keystone, and umbrella species. Although historically, conservation strategies have focused on single species preservation, and this approach remains important, this approach has challenges because of the effects of climate change on habitats (Hansen & Hoffman, 2011, p. 123). Climate change will likely modify habitats making certain habitats no longer livable for specific species while making them ideal locations for others. This will result in new and different species in habitats where they were not found before. Such a change will complicate single-species preservation strategies that focus on species located in a specific region or area. Instead, strategies should maintain habitat interconnectivity.

Conservation strategies that focus on keystone and umbrella species acknowledge that interconnectivity. Keystone species are those whose removal would "cause dramatic changes in the community, be it through predation, competition, or modification of the physical or chemical environment" (Hansen & Hoffman, 2011, p. 124; Mills, Soule, & Doak, 1993). These species play a key role in the way ecosystems function. Likewise, protection for umbrella species results in greater and comprehensive safeguarding for other species that live in the same ecosystem and that share similar "habitat-use patterns" (Hansen & Hoffman, 2011, p. 126). Adaptation

plans that protect keystone and umbrella species would both increase the resilience of the community because their protection results in a trickle down effect for the protection of other species within their habitats. At the same time, Mills, Soule, and Doak (1993) warn of the difficulty in identifying keystone species, possibly resulting in the protection of species that are identified as such, while ignoring other similarly important species that have not been labeled "keystone" (p. 222).

One method to protect both keystone and umbrella species is to preserve and restore habitat connectivity. Through connectivity, corridors can be created along climate gradients allowing species to move in response to changes in climate (Beatley, 2000; Hansen & Hoffman, 2011, p. 139). The more species present and protected, the more equilibrium achieved, increasing persistence and resilience (Holling, 1973, p. 19). In an unpredictable world faced with effects of climate change, resilience, through corridor conservation as well as keystone and umbrella species protection, will allow ecosystems to absorb and resist disturbance.

The effectiveness of these strategies for adaptation planning can be reinforced through the implementation of flexible policies. Flexibility is important because of the uncertainty and rapidly changing conditions due to climate change. One way to provide flexibility is by developing plans at a cross-sectoral level (Armitage, 2007, p. 77). Climate change science shows how the effects of climate change will affect communities in numerous ways. Agricultural yields will be affected, floods and droughts will both be seen more frequently, habitats will be altered endangering even more species, coastal

communities face dangers from sea level rise, water sources will be contaminated, among other effects. All of these threats mean that governments need to be flexible and ready to respond and protect their nations at numerous levels. In order to address all of these needs, it is therefore important that national adaptation plans include input from the various sectors and not only the ministry of the environment (Folke, Carpenter, Elmqvist, Gunderson, Holling, Walker, 2002, p. 437). The NRC (2010) suggests that responses to climate change begin by receiving input from all interested parties (all levels of government, NGOs, and other community and private parties), in order to determine the community's vulnerabilities to climate change. The identification of these vulnerabilities then becomes the baseline for the processes and regulations that will be implemented to plan for these changes.

Furthermore, integration and flexibility are important for policies. Integration across sectors and organizations promotes collaboration and reduces the likelihood that agencies will promote their own agenda. In addition to formal environmental law, cross-sectoral collaboration in the development of adaptation responses could reduce the occurrence of such side effects. Flexibility in policies is also necessary for another reason. Effective adaptation methods are context-based and will therefore vary from case to case. As information on climate change and technology continues to expand, policies that are implemented to address climate change need to also retain flexibility in order to respond to the ever-increasing body of knowledge (NRC, 2010). What works well in one location may not be effective in another. Policy makers need to assess

baseline data that has been gathered for the region in order to implement programs that are more effective and responsive to the context.

National Adaptation Programmes of Action

As a result of the ecological, economic and social conditions as well as vulnerabilities identified, and in order to address these concerns using the recommendations of best adaptation methods, National Adaptation Programmes of Action (NAPAs) were established in 2001 as part of the Marrakech Accords at the 7th meeting of the Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (Hardee, K. & Mutunga, C., 2010, p. 114; Huq, S., Rahman, A., Konate, M., Sokona, Y., & Reid, H., 2003, p. 6). Part of the rationale in developing NAPAs in the Least Developed Countries (LDCs) is to prepare those countries that have "low adaptive capacity" to respond to the effects of climate change while protecting the poor and most vulnerable (UNFCCCa, 2002, p. 1; Hardee, K. & Mutunga, C., 2010, p. 115). NAPAs were also established to enable these nations to "quickly and effectively communicate their . . . adaptation needs" (UNFCCCa, 2002; Hardee, K. & Mutunga, C. 2010, p. 114). The priority activities listed in NAPAs are those that, if delayed, would only increase the vulnerability of LDCs and/or potentially lead to increased costs in the future (UNFCCCb, 2002, p. 8). The UN recognizes that in order for adaptation plans to be effective in LDCs and effective in identifying priority activities, these initiatives must take into consideration the economic and social needs, as well as

environmental concerns (UNFCCCa, 2011, p. 10; Huq, S., Rahman, A., Konate, M., Sokona, Y. & Reid, H., 2003, p. 6).

The UNFCCC identifies ten guiding elements for NAPAs. Under these guidelines, NAPAs should 1) be conducted in a participatory fashion, including stakeholders and local communities, 2) have a multidisciplinary approach, 3) complement and build on existing national plans and programmes, 4) be guided by sustainable development, 5) consider gender equality, 6) be formed from a country-driven approach, 7) incorporate sound environmental management, 8) exemplify cost-effectiveness, 9) be simple, and 10) allow for flexibility in procedures based on individual country circumstances (UNFCCCb, 2002, p. 9). These criteria point to the importance of ensuring that priority is given to both the poor and the environment.

The first of the guiding elements established by the UNFCCC for NAPAs is that they be participatory, including stakeholder and local community input. The literature on effective adaptation plans and on plan evaluation points to the importance for stakeholder participation, including local knowledge and the input of civil society groups. A participatory approach is also important due to the quality information and insight that stakeholders (particularly local community members) can provide for the program, as well as the fact that they will be the most affected by the effects of climate change and should therefore have an input into the concerns that should be addressed in these plans. (UNFCCCa, 2002, p. 2).

NAPAs should have a multidisciplinary approach, complementing and building off of current national development and conservation programmes in place that additionally promote sustainability. In addition to responding and preparing for adaptation, NAPAs were originally established to correspond and be integrated with the nations' development processes (plans already in place in LDCs, as well as other multilateral agreements). One of the major concerns of the effects of climate change on LDCs is that these impacts will setback advances that have been made around the globe towards accomplishment of Millenium Development Goals (MDGs).[1] By integrating NAPAs with existing development plans, programmes will be better able to simultaneously address climate change vulnerabilities and the needs of the poor and women (including the MDGs specifically) (Hardee & Mutunga, 2010, p. 116). In addition to meeting the needs of the poor through integration with national development programmes, adaptation plans should also align with other multilateral environmental agreements. It is argued that better coordination between Multilateral Environmental Agreements (such as between the United Nations Convention to Combat Desertification and national biodiversity strategies and action plans under the United Nations Convention on Biological Diversity) will result in synergies that will provide financial efficiency due to less duplication of efforts, better utilization of knowledge and human resources, and "enhanced ability to engage in effective environmental management"

[1] MDGs include goals to "reduc[e] poverty, provid[e] general education and health services, improv[e] living conditions in urban settlements and provid[e] access to financial markets and technologies" [Ayers & Huq, 2008, p. 5].

(UNFCCC, 2002, p. 13). Even when integrating NAPAs with other multilateral environmental agreements, it is important that strategies and programs implemented to meet the goals of these agreements are not precluding the concerns of the poor and biodiversity preservation. Instead, the effective coordination between programs can serve to "enhanc[e] the resilience and protective capacity of ecosystems [that] will also help ensure the economic and social well-being of a country's people" (UNFCCC, 2002, p. 14). This is especially true for the poor that live off of the land and its products (UNFCCC, 2002, p. 14). To be effective, adaptation methods must therefore be cross-sectoral, including internal and international collaboration between environmental groups, public health representatives, land use planners, community members, and international governments (Hansen & Hoffman, 2011, p. 25). Accordingly, NAPAs should be integrated with both national and international development and conservation programmes.

Specifically, NAPAs have a guiding element that states that they should be developed with cognizance for gender equality. Women will be disproportionately affected by climate change impacts, particularly through water (literature on climate change shows that water resources will be negatively affected by climate change) (UNFCCC, 2002, p. 3). Women around the world tend to be the "managers and carriers" of water (Sitaraman, 2008, p. 93). In a case study of the nation of Burkina Faso, researchers identified that "small-scale farmers in general, and women and children in

particular" are the most vulnerable to climate change environmental hazards (Kalame, Kudejira, and Nkem, 2010, p. 541). This is a reality for women and children worldwide.

Additionally, NAPAs should be developed through a country-driven approach. The specific climate change effects faced by LDCs will vary based on country context. Each country's vulnerabilities ought to be identified in order to determine areas of priority for the country that need to be addressed (UNFCCCc, 2002, p.8). In order for this to be accomplished, data must be available at a local level. Showing the costs and benefits of adaptation methods at the local level would inform the choice of adaptation methods, identifying those that would be most advantageous in different contexts. Some steps have been taken in the area of data-gathering, however, there are still regions in the world that either lack data altogether or have an insufficient amount of data. This baseline of information would be useful to determine additional effects of climate change and determine the most important adaptation methods that could be implemented to respond to climate change. Recognizing these challenges, the United Nations recommends that these plans include capacity building for LDCs (UNFCCCc, 2002, p. 9). Through capacity building, LDCs may be able to obtain the information necessary to develop effective plans and adaptation programmes.

Although NAPAs have a strong emphasis on protection of the vulnerable in LDCs, guiding principles recognize the importance of sound environmental management within the plans. Once again, the United Nations recognizes that many of the LDCs contain fragile ecosystems, land degradation and desertification, undeveloped services

(including water management services), and lack of early warning signals for natural disaster management (UNFCCCc, 2002, p. 9). These characteristics and conditions within LDCs stress the importance of sound environmental management to: (1) preserve fragile ecosystems that sustain subsistence economies, (2) end degradation of and promote land restoration, (3) develop better services management that would only benefit the poor within the countries, and (4) prepare better natural disaster management systems that would give the added benefit of protection for the poor and most vulnerable within these countries.

Least Developed Countries have limited financial resources and numerous internal priorities that need to be addressed by their governments in order to protect and provide for their citizens. The NAPAs aid these LDCs in identifying vulnerabilities and prioritizing those to address. Although several funding mechanisms are in place to assist LDCs in implementing NAPA identified projects, these projects and initiatives will pose additional budgetary requirements on LDCs. Consequently, it is important that these projects be developed with cost efficiency in mind, where benefits outweigh the costs. Developing cost-efficient programs that complement other national priorities will result in better internal coordination and less internal competition for the implementation of different types of programs and different priorities.

NAPAs were implemented in part with the purpose of communicating adaptation needs and plans to policy makers and the general public. Although the science of climate change and the possible adaptation methods to address its effects include

technical and complicated terms, the UN has stated that NAPAs should be guided by an element of simplicity. To address the complexity of climate change responses, simplicity must be balanced with a certain level of technicality. Simplicity will help communicate goals more effectively to policy makers and the general public alike. It is important that plans be fully understood by the general public and by policy makers. Creating plans that are fully understood increases support from both policy makers and from the community as a whole, both of which are important and essential to "promot[e] awareness and support" as well as to "enhan[e] prospects for democratic determination and implementation of community land use and development policies" (Berke, Godschalk, and Kaiser, 2006, p. 73). In this way, plans are also advocacy and mobilizing tools; there is advocacy for the goals and vision found within the plan and mobilization toward support for the plans. Support is necessary in order for the plans to be carried out and is obtained through the advocacy of the goals and visions.

Lastly, NAPAs should be guided by a flexibility of procedures based on individual country circumstances. Flexibility recognizes differences between countries (differences in political, cultural and societal structures) that may influence the way adaptation plans are accepted and implemented within the countries. Flexibility also recognizes that what works in one country may not work well in another. Lastly, flexibility recognizes and values an iterative process where best practices are sought through regular monitoring and evaluation to determine the effectiveness of implemented practices. Flexibility is important in plan development generally, and it is important all the more in

climate change adaptation planning since the exact effects of climate change are not fully known nor can they be completely predicted.

The United Nations Framework Convention on Climate Change (UNFCCC) provides structural, as well as content-based guidelines for the NAPAs. This structure consists of the following sections and order: introduction and setting; framework for adaptation programme; identification of key adaptation needs; criteria for selecting priority activities; list of priority activities; and the NAPA preparation process (UNFCCCb, 2002). Although specific guidelines have been established, it still needs to be determined whether and how the NAPAs that have been submitted to date incorporate these elements, as well as whether the adaptation mechanisms and policies address the concerns of the poor and biodiversity preservation.

Plan Evaluation

In addition to the literature outlining effective adaptation strategies to respond to climate change, there are specific qualities that make plans in general more effective – qualities that should be incorporated into adaptation plans for climate change and qualities that should be included when doing plan evaluation. The plan quality and evaluation literature identifies two dimensions that should be included in any evaluation of plans: "internal" and "external" plan qualities (Berke, Godschalk, and Kaiser, 2006, p. 70).

The internal plan qualities consist of the content and format of key components of a plan (Berke, Godschalk, and Kaiser, 2006, p. 70). Internal plan quality refers to the

issues and vision statement, the fact base, the goal and policy framework, and the plan proposals (Berke, Godschalk, and Kaiser, 2006, p. 70). Brody (2003b) extended previous definitions of plan quality from the inclusion of factual basis, goals, and policies, to also include inter-organizational coordination and capabilities, as well as implementation (p. 514). Brody identified these last two components as being essential for plans that include ecosystem management (Brody, 2003b, p. 514). The five components fall under the internal quality of a plan.

A strong factual basis is necessary in order to develop effective policy and action. The factual basis assesses existing conditions, as well as possible future conditions, and identifies both a community's challenges and assets (Berke, Godschalk, and Kaiser, 2006, p. 70). For adaptation plans, this step includes the identification of the vulnerabilities faced by the community, and the vulnerabilities that will need to be addressed in the plan. A strong factual base serves as the foundation on which policy decisions are then made (Brody, 2003b, p. 517).

One important consideration in the development of the factual base is the need to maintain a balance between regional and local concerns. In order to develop effective ecosystem management plans, there must be "focus on broad spatial scales" (Brody, 2003b, p. 512). Challenges and vulnerabilities faced by nations in regard to climate change will transcend local boundaries. At the same time, there must be recognition that actions and policy taken to address these challenges will be implemented at the local level (Brody, 2003b, p. 512). Consequently, the factual basis

must take this into account and provide a balance between regional and local information.

The second important component of plans is clear goals and objectives. Clear goals and objectives are necessary to translate a vision into actual implementation (Berke, Godschalk, and Kaiser, 2006, p. 60). Goals and objectives present the "future condition to which a local community aspires" (Brody, 2003b, p. 518). This part translates the vision into actual steps that can be taken by the community, by organizations, and by the various levels of government. In order for goals and objectives to be effective, they should include both long-term and short-term goals, as well as measureable objectives (Brody, 2003b, p. 518). A strong factual basis lends to the development of goals and objectives that adequately address the challenges faced by the community while building off of its strengths.

Once both a strong factual basis and goals are clearly stated, it is important to have efficient inter-organizational coordination. The identification of the factual base, as well as the outlining of the goals will show that numerous organizations are needed to effectively fulfill all of the goals and objectives. Without collaboration, there is a greater risk that the goals will not be reached. Without collaboration, there is also a greater risk that efforts may be duplicated in contexts where resources are limited. "Uncoordinated local land use decisions have a cumulative negative impact" on the effectiveness of plans (Brody, 2003b, p. 519). This need for coordination and collaboration points to the importance of broad stakeholder participation.

There are several reasons for participation. Through stakeholder participation, individuals gain information on how the plans will affect them; at the same time, the planners, policy-makers and others involved in the plan development process gain information that allows them to better understand the public's values and interests (Brody, 2003a, p. 193). Participation leads to better collaboration through the development of a forum where concerns can be made known and where stakeholders can state how they can address those concerns (eliminating or reducing the likelihood of duplicated efforts). In this context, it is also possible to obtain lay knowledge (knowledge that has been shown to be valuable and important when developing adaptation plans) (Laurian, 2004, p. 53). Inclusion of lay knowledge in the decision-making and in the actual policies and plans that are implemented creates a sense of empowerment by the community. Participation is also important to a democratic process, forcing agencies and governments to be accountable to the publics that they serve and represent (Laurian, 2004, p. 53; Brody, 2003c, p. 409). Through participation, the community increases trust for the policies and processes that are implemented. Just as significantly, studies show that participation actually increases the quality of ecosystem plans (Brody, 2003c, p. 407). These are all reasons to encourage participation across sectors and by the general public when developing adaptation plans and their specific policies and strategies.

The fourth essential component of plans is composed of the policies, tools and strategies that are developed through stakeholder participation and inter-organizational

collaboration, in order to meet the goals that have been established as a result of the factual basis developed. Although policies are based off of the facts that have been identified, they focus on government action (Brody, 2003b, p. 520). Policies should be derived in part from methods that have been identified as being the most efficient to address climate change (based off of adaptation planning literature). It is imperative that there be flexibility within these policies. As additional information is obtained on the effects of climate change and on the most effective methods to address climate change, governmental bodies and policies need to be able to change, in response.

Once policies and strategies have been identified, the last critical component of internal plan quality is clearly defined implementation steps. Clearly defined implementation is necessary in order to outline how the plan will actually be carried forth (Brody, 2003b, p. 520). The identification of strategies should once again be balanced with flexibility allowing countries to respond when faced with changing conditions. Clearly defined implementation also includes clearly identifying who will be responsible for the different actions and even what sanctions will take place should the actions fail to be carried out (Brody, 2003b, p. 521). The implementation step also includes monitoring. The monitoring step is vital to evaluate the plan, to see whether the plan is meeting the needs identified, and to see whether it is meeting the defined goals (Berke, Godschalk, and Kaiser, 2006, p. 72). Through monitoring steps, plans can be updated as necessary to ensure that they are meeting the most important identified needs.

While internal plan quality refers to the content and format of the different sections of a plan, plan evaluation needs to consider a plan's external quality, which communicates the relevance of the information for the locality, as found within the plan (Berke, Godschalk, and Kaiser, 2006, p. 70). A plan's external quality refers to the relevance of the scope and coverage of the plan in fitting the local situation and the specific context (Berke, Godschalk, and Kaiser, 2006, p. 72). Whether a plan fits and meets the needs of the specific situation and context can be measured through four criteria: whether plans "encourage opportunities to use [these] plans; create clear views and understandings of plans; account for interdependent actions in plan scope; and reveal the participation of actors" (Berke, Godschalk, and Kaiser, 2006, p. 72). Plans should be created in such ways that they are recognized as important and are actually used. There are several ways in which this can be accomplished in the plan. Plans that are inspirational, action-oriented, flexible and legally defensible have a greater likelihood of being recognized as important and of being implemented (Berke, Godschalk, and Kaiser, 2006, p. 73). It is essential that plans "communicat[e] a vision of the future in a way that unites and inspires the community to implement it" (McClendon, 2003, p. 228).

Plans need to also be relevant and understandable by other governmental entities and individuals (this helps promote awareness and support for the plan and reinforces the need to have coordination among the various governmental ministries) (Berke, Godschalk, and Kaiser, 2006, p. 73). Plans should recognize that there is

interdependence among organizations and players (Berke, Godschalk, and Kaiser, 2006, p. 73). The exclusion of a sector could mean that crucial considerations are overlooked in adaptation plans. What is done in one governmental ministry will affect others. In addition to ensuring that plans have a strong collaborative component, another fundamental part of the external quality of plans is the participatory process itself. Although Berke, Godschalk, and Kaiser (2006) argue that revealing the participatory process translates into a greater chance of the plan being implemented (p. 74), Brody (2003c) states that there are few actual empirical studies that support these claims (p. 409). Consequently, it would be beneficial specifically to study the NAPAs that have been submitted by LDCs to determine the level of participation and whether it has influenced the effectiveness of plans.

Climate change presents numerous challenges to communities around the globe, as well as to numerous species. The vulnerabilities faced by communities and species include droughts, floods, rising sea levels, water contamination, decreased agricultural yields, among others. Least Developed Countries have been identified by the world community as being the most vulnerable to the effects of climate change. Consequently, the international community developed National Adaptation Programmes of Action to communicate the needs and strategies that will be taken by LDCs to address these challenges. The literature points to several effective adaptation strategies that can be taken to address climate change, as well as effective plan qualities in general to evaluate plans. Although these strategies and qualities have been

identified, and although NAPAs include guidelines that should be followed, there lacks a general assessment of the NAPAs that have been submitted to date that evaluates them based on how they address the needs of the poor and the environment (specifically to protect biodiversity). These two groups are the most vulnerable to the effects of climate change, and these groups do not have a strong voice to communicate their needs. An assessment of these plans to determine how they are addressing the needs of these two groups is essential, therefore, and will contribute to give these groups a voice.

METHODOLOGY

Numerous adaptation methods have been identified that address the effects of climate change. Additionally, plan tools and criteria exist by which to evaluate plans. Nevertheless, the literature indicates that there lacks a specific evaluation of National Adaptation Programmes of Action (NAPAs) submitted by Least Developed Countries (LDCs) to the United Nations to see how these plans actually address the needs of the poor and the preservation of biodiversity. The literature shows that these two groups are particularly vulnerable to the effects of climate change; therefore their protection is specifically necessary in the NAPAs.

Of all of the LDCs, the IPCC states that the continent of Africa is "likely to be the . . . most vulnerable to climate change" (IPCCc, 2007). The LDCs in Africa in particular face additional risks. This vulnerability is linked to the "low adaptive capacity of [the continent's] population" (Huq, S. Rahman, A., Konate, M., Sokona, Y., & Reid, H., 2003, p. 12). These risks and vulnerabilities include increased water stress, reductions in agricultural productivity and food security, potentially increased rates of climate related illnesses, increased vulnerabilities to those that live along the coasts of the continent, greater incidences of floods and droughts, which can both have devastating effects on the livelihoods of communities (IPCCc, 2007; Huq, S., Rahman, A., Konate, M., Sokona, Y., & Reid, H., 2003, p.12-14). In light of the millions of lives that are particularly vulnerable to the effects of climate change in the African continent and the lack of an

evaluation of how NAPAs are meeting the needs of the poor and biodiversity preservation in the African continent, this research attempts to fill this gap by evaluating the NAPAs submitted by African nations to the UNFCCC to determine how they address the needs of the poor and maintain biodiversity.

To do so, two types of coding were used to assess the 32 African NAPAs (out of a total of 47 NAPAs) that have been submitted to date to the United Nations. The types of coding used were descriptive coding and magnitude coding. Descriptive coding is used as the "basic vocabulary" from which further analysis is then conducted (Saldaña, 2009, p. 70). Through descriptive coding the NAPAs were evaluated to identify whether criteria are present in the plans. A word or short phrase from the matrix was assigned to segments of the plans to identify the presence of the criteria. In order to enhance this first analysis, magnitude coding was conducted. Magnitude coding consists of the addition of "a supplemental alphanumeric or symbolic code or subcode to an existing coded datum or category to indicate its intensity, frequency, direction, presence, or evaluative content" (Saldaña, 2009, p. 58).

The NAPAs were reviewed through an evaluation framework that was developed to assess the plans. The evaluation framework consists of a matrix of criteria that have been identified in the literature as being important when developing effective adaptation plans (specifically to address the needs of the poor and biodiversity). The literature does not prioritize one criterion's importance over any others. Rather, the literature identifies different components that should be included in adaptation plans,

generally, and in adaptation plans for LDCs specifically. The matrix reflects the literature, with each criterion given equal weight. However, this does create bias, as discussed at the end of the Methodology section. (Berke, Godschalk, and Kaiser, 2006, pp. 78-82; Brody, 2003b, pp. 515-517; Laurian, 2004, pp. 53-65; Hansen & Hoffman, 2011, p. 136; Hannah, 2009, p. 71-72; Wiens & Bachelet, 2009, p. 52; Gunningham & Young, 1997; Oxfam, 2009, p. 7; Gleick, 2010, p. 77; Pilkey & Young, 2009; Mimura, 1999; Blanco & Alberti, 2009; Nyong, Adesina, & Osman-Elasha, 2007; Preston, Westaway, & Yuen, 2010; Zinn, 2007).

Despite being developed from the literature, these criteria appear to have limitations. The assessment of the NAPAs (created by and for Least Developed Countries) is based on a United States standard for plan evaluation. The criteria for the United States are still valid for Least Developed Countries. The criteria for the United States incorporates some of the most recent scientific knowledge and research on adaptation for climate change in order to preserve ecosystems. The economies and livelihoods of the LDCs are based on natural systems. By applying these criteria, the natural systems of LDCs will be preserved, and from this preservation, their economies and livelihoods will be protected. The criteria for best practices have been selected with care not to impose developed world standards to the LDCs. Instead, the criteria have been chosen to ensure that the needs of the poor and of biodiversity are safeguarded. This was accomplished by selecting criteria that reflect best practices and standards for

the planning practice itself (not criteria that determine specifically *how* to adapt), as well as criteria that reflect best practices for adaptation.

Criteria include information necessary for an effective plan generally, as well as information necessary for an effective adaptation plan for climate change that addresses the needs of the poor and biodiversity. The magnitude coding used in the evaluation of NAPAs consists of three ranking categories (a range of 0 to 2, as shown in Figure 2).

Coding Categories	
2	Identified, clear
1	Identified, vague
0	Not identified

Figure 2: Coding Ranking Categories

NAPAs received a "0" for a complete lack of identification and mention of the criteria or the exclusion of an adaptation method. NAPAs that identify the criteria, making reference to it, however, remaining vague received a "1." NAPAs that identify the criteria clearly and include relevant descriptions and details, including possibly listing one of the mechanisms that have been identified as best methods in the literature received a "2." Berke, Godschalk, and Kaiser (2006) suggest that these rankings are an efficient method of evaluating plan quality among a list of criteria. Using these rankings as a form of magnitude coding helped recognize the intensity and frequency of the evaluative content that was first identified through descriptive coding.

Using the criteria from the literature, the following matrix assessed the breadth and depth of the African LDCs NAPAs:

1. Fact Base

a. Database listing threatened species (identifying vulnerabilities faced by the natural systems).
b. Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.).
c. Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.).

2. Goals and Objectives
    a. Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors.
    b. Protect water sources to ensure water quality and quantity.
    c. Train communities in new workforce skills or better practices that incorporate readiness for climate change.
3. Inter-organizational Coordination
    a. Evidence of coordination between highest levels of government and local governments, as well as with the community generally and the private sector.
    b. Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (including indigenous input).
4. Policies, Tools, and Strategies
    a. Preserve and promote habitat corridors.

b. Policies that take into consideration water access and quality, while allowing for flexibility.
c. Offering incentives or requiring individuals to move from the shoreline or developing structures that can adapt to rising sea level.
d. Adaptation policies refer to or are linked to existing national plans and programs.

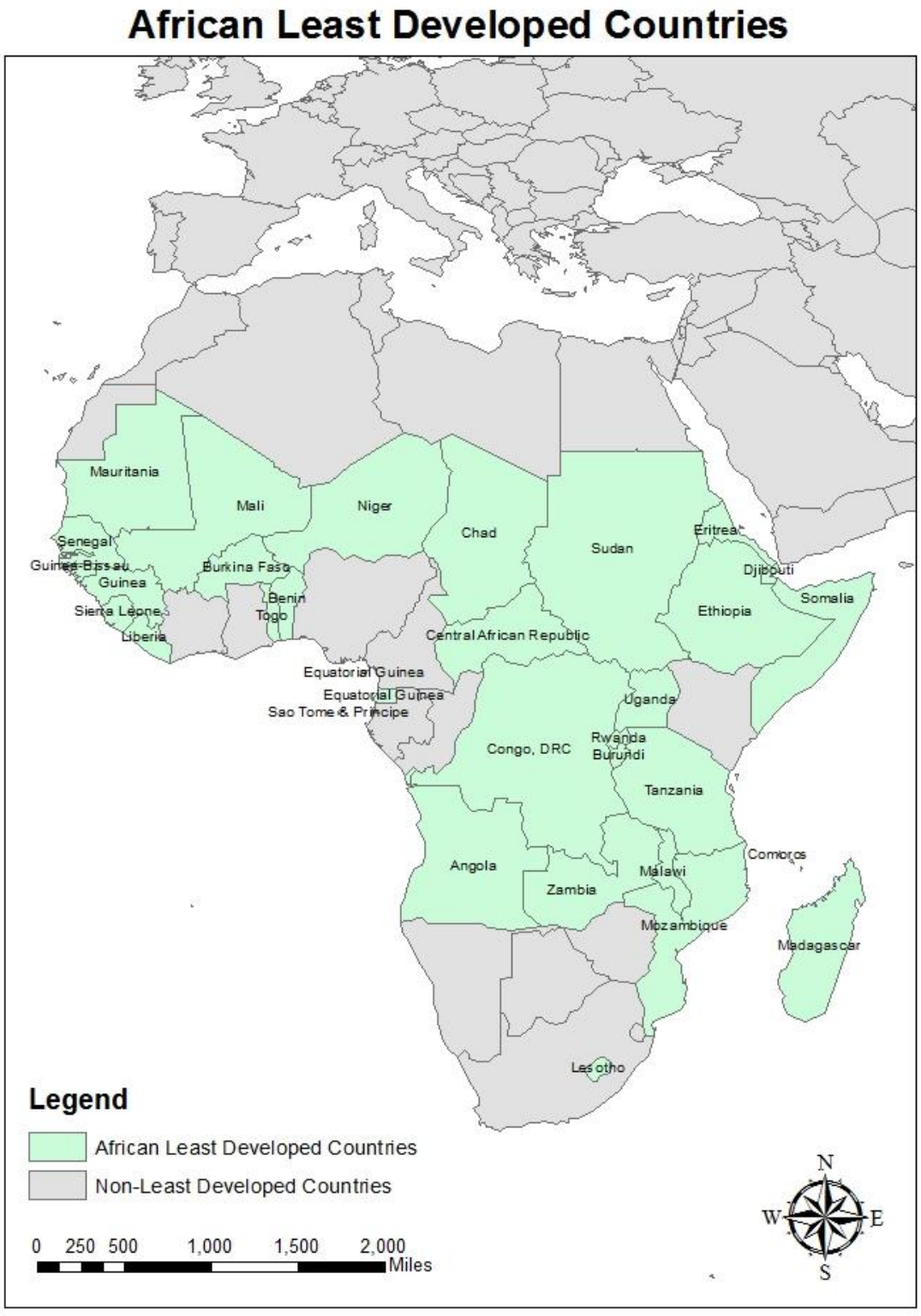
5. Clearly Defined Implementation
    a. Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation.
    b. Implementation strategies should be both short-term and long-term.

(Berke, Godschalk, and Kaiser, 2006, pp. 78-82; Brody, 2003b, pp. 515-517; Laurian, 2004, pp. 53-65; Hansen & Hoffman, 2011, p. 136; Hannah, 2009, p. 71-72; Wiens & Bachelet, 2009, p. 52; Gunningham & Young, 1997; Oxfam, 2009, p. 7; Gleick, 2010, p. 77; Pilkey & Young, 2009; Mimura, 1999; Blanco & Alberti, 2009; Nyong, Adesina, & Osman-Elasha, 2007; Preston, Westaway, & Yuen, 2010; Zinn, 2007)

The matrix of criteria listed evaluates the extent to which the NAPAs are addressing the needs of the poor and the preservation of biodiversity within the African continent. Out of the total 47 NAPAs that have been submitted to the UNFCCC, the majority has been submitted by African nations (total of 32). Eleven of the 32 NAPAs were submitted in the UN official language of French; the others were submitted in English. These NAPAs represent a wide spectrum of geographically-differentiated

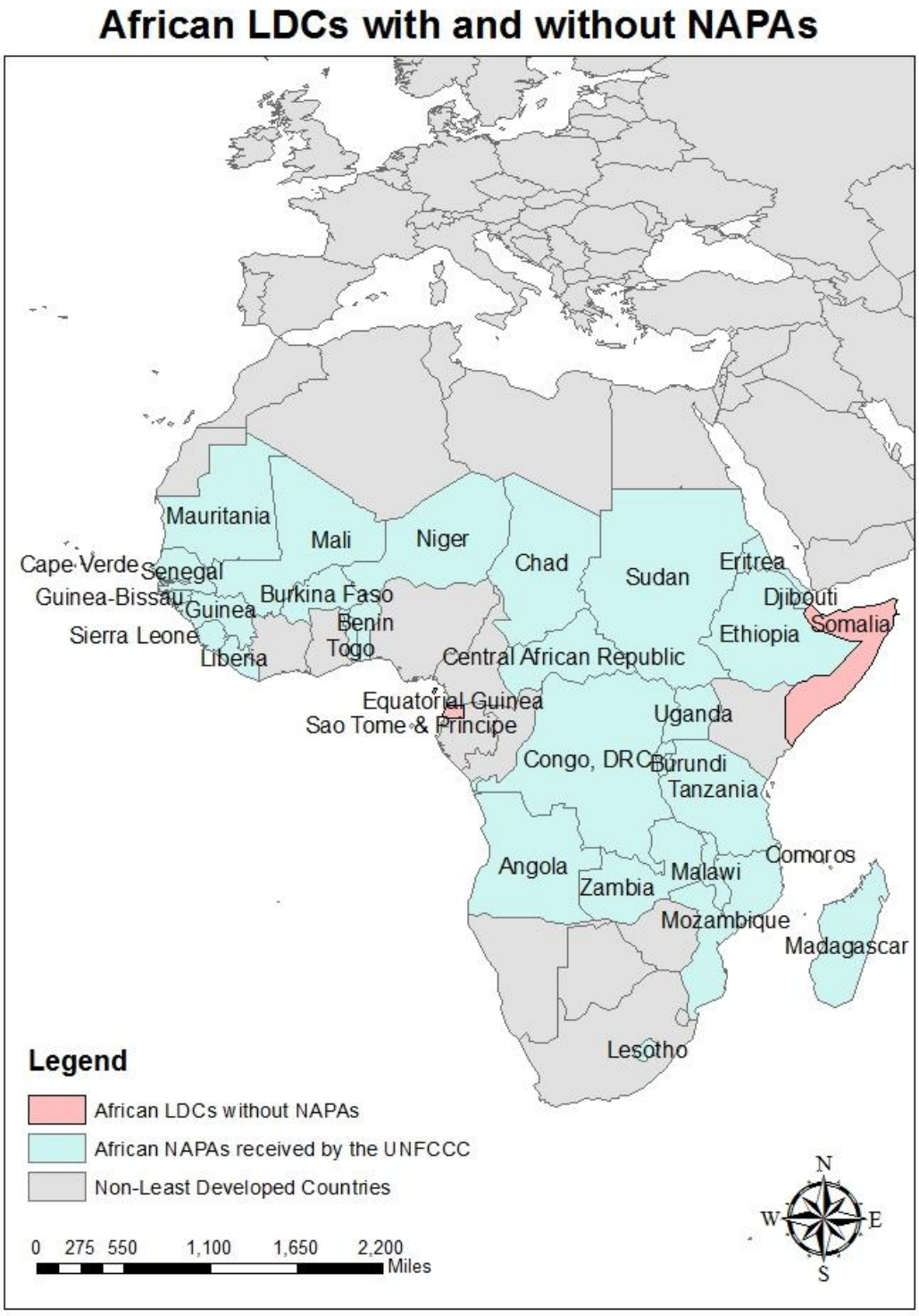
nations: lying on the coast, land-locked, islands, very small (land mass), and very large. This comprehensive representation permits a comparison across these differences, seeking patterns and commonalities. The African NAPAs were selected for assessment to determine whether they are including the items identified in the literature, as specifically stated in the matrix, and, if so, to determine the extent of inclusion of these criteria.

There are specific characteristics of the 32 African NAPAs (See Figure 3 for a map of the African LDCs and Figure 4 for a map of the 32 African NAPAs). Out of the 32 NAPAs, the earliest submitted to the UNFCCC was Mauritania, which was submitted in November of 2004. The last one to be submitted was Angola, which was submitted in December of 2011.



Source: United Nations

Figure 3: African Least Developed Countries



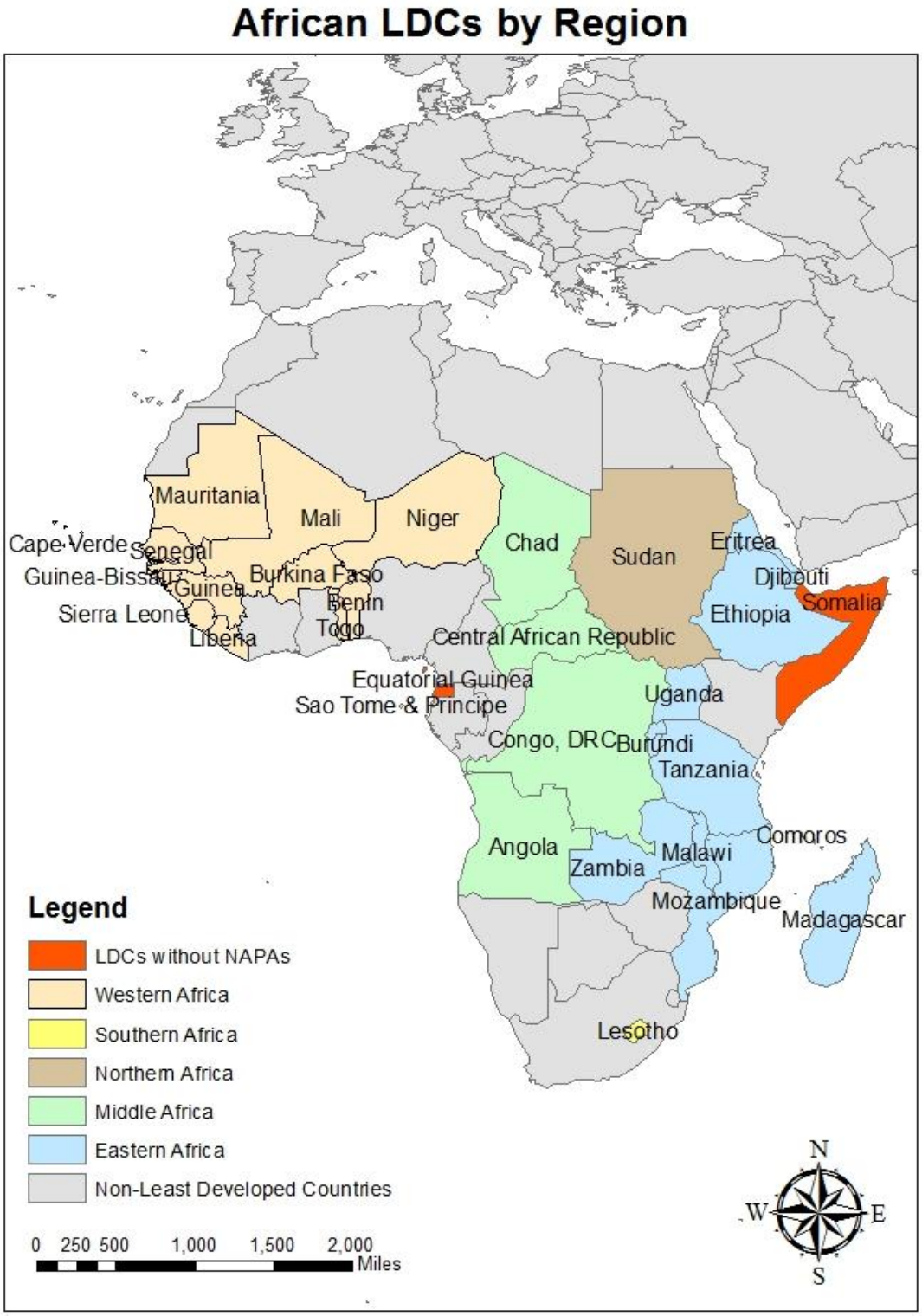
Source: United Nations

Figure 4: African LDCs with and without NAPAs

Twenty of the African NAPAs represent coastal-lying nations, while twelve represent land-locked countries in the continent. Four of these nations are island states, two lying in the Atlantic Ocean (Cape Verde and Sao Tome and Principe), and two lying in the Indian Ocean (The Union of the Comoros and Madagascar). The African continent can be divided into five regions: Eastern, Middle, Northern, Southern, and Western (See Figures 5 and 6 for a listing and map of the regions, respectively). Nineteen nations are in Eastern Africa, out of which, twelve have submitted NAPAs. Nine nations are in Middle Africa, out of which five have submitted NAPAs. Eight nations make up Northern Africa; out of these, one has submitted a NAPA. Five nations are classified in Southern Africa, out of which one has submitted a NAPA. Finally, seventeen nations make up Western Africa, out of which thirteen have submitted NAPAs. See the table below for a list of the African nations submitting NAPAs, classified by sub-region (UN Statistics Division, 2012).

AFRICAN LEAST DEVELOPED COUNTRIES BY REGION				
Eastern	**Middle**	**Northern**	**Southern**	**Western**
Burundi	Angola	Sudan	Lesotho	Benin
Union of the Comoros	Central African Republic			Burkina Faso
Djibouti	Chad			Cape Verde
Eritrea	Dem. Republic of Congo			Gambia
Ethiopia	Sao Tome and Principe			Guinea
Madagascar				Guinea-Bissau
Malawi				Liberia
Mozambique				Mali
Rwanda				Mauritania
Uganda				Niger
United Rep. of Tanzania				Senegal
Zambia				Sierra Leone
				Togo

Figure 5: African LDCs with Submitted NAPAs, by Region



Source: United Nations

Figure 6: African LDCs by Region

Having been classified Least Developed Countries, each of the nations above met all of the following criteria: they are characterized by a Gross National Income averaged over a three-year period of less than $750; they have a human resource weakness criterion based on a composite of nutrition, health, education and adult literacy (Human Assets Index); and they have an economic vulnerability criterion based on "indicators of the instability of agricultural production, the instability of exports goods and services, the economic importance of non-traditional activities, merchandise export concentration, the handicap of economic smallness, and the percentage of population displaced by natural disasters" (UN-OHRLLS, 2012). These characteristics make Least Developed Countries particularly vulnerable. Should natural disasters, public health challenges, water shortages, etc. be experienced in these countries (all possible effects of climate change), it will be even more difficult for the governments and nations to respond to these events. Consequently, it is all the more urgent that these nations take steps to prepare for possible effects of climate change. Only by being prepared can these nations reduce the possibilities of loss of human life, as well as ecosystem and other species loss.

Regional and overall trends were identified using the matrix of criteria to assess NAPAs. Specifically, the assessment identified how the NAPAs are addressing the needs of the poor and of biodiversity preservation: two groups that are voiceless within these nations. General observations were made to compare the distinct countries and criteria results. Furthermore, this evaluation determined whether there is a difference based

on other specific characteristics: geographical distinctions (coastal and land-locked countries); regional differences (comparing five African regions, as identified by the United Nations); gross national income, per capita differences; differences based on the percentage of the population that is female; and differences based on the submission dates of each NAPA.

The literature supports the examination of these particular categories. Coastal communities have added vulnerabilities, including reduced water quality due to salt-water intrusion into coastal aquifers (Gleick, 2010, p. 76; Mimura, 1999, p. 140). Many cities are located along the coast, increasing the number of people that could be affected by rising sea levels (Mimura, 1999, p. 139; Oliver-Smith, 2009, p. 9). The precarious nature of coastal zones demands specific types of precaution, including extra safety measures. This comparison, therefore, seeks to identify whether coastal nations are preparing in different and even more detailed ways than are landlocked countries in order to protect their poor communities and their biodiversity preservation efforts.

There is also reason to compare the five regional areas in Africa. The United Nations has divided the African continent into five regions (Southern, Eastern, Northern, Western, and Middle). According to the IPCC, different areas in the continent will face a variety of climate change effects and will experience these effects at variable intensities (IPCCc, 2007). The intensities may cause disparate impacts on the poor and ecosystems supporting biodiversity. Some of the regional trends include increasing temperatures in southern and western Africa, while there are decreasing instances of temperature

trends in eastern Africa (IPCCc, 2007). These are just some of the observations that support the regional examination.

Assessing the NAPAs by the nations' gross national income per capita allows and examination of GNI's role in creating plans that protect the impoverished and biodiversity. Extreme weather events will have impacts in the economies of nations. While climate events may affect developed countries in ways that cost an excess of up to 10% of their national income, similar events may affect developing countries that are less diversified in a manner that would exceed 50% of their national income (IPCCc, 2007). The possibility of events impacting developing nations at such a percentage stresses the critical need for nations to prepare adaptation and mitigation plans in order to protect the poor and in order to maintain the natural systems (biodiversity preservation) upon which they depend for their livelihoods. By comparing plans across GNI rates, it is possible to determine whether nations that have higher GNIs have a corresponding technical capacity to develop these plans, or if nations with larger climate impacts on their economies are taking greater steps to prepare for climate stresses.

Additionally, women have particular climate change vulnerability in LDCs, and retain important local adaptation knowledge (UNFCCC, 2002; IPCCc, 2007; Sitaraman, 2008, p. 93). Therefore, it is important to determine if there are differences in the NAPAs based on the percentage of females in the country populations. The United Nations includes a specific guideline for NAPAs that requires them to consider gender equality (UNFCCC, 2002). This principle stems from findings that women will be

disproportionately affected by climate change impacts (UNFCCC, 2002, p. 3). The IPCC states that children and pregnant women are particularly vulnerable to vector- and water-borne illnesses (IPCCc, 2007). Furthermore, women are the "managers and carriers" of water, so they are more directly impacted by alterations in water quantity and quality (Sitaraman, 2008, p. 93). Also, the literature states that women are critical in providing valid and vital local and traditional knowledge, which could make plans stronger (UNFCCC, 2002, p. 3). These various statements point to the significance in determining if there is a difference in plans based on the percentage of women in the population.

Lastly, it is worthwhile to determine whether time and scientific knowledge have improved NAPA quality. This is accomplished by identifying variations in NAPAs based on the year in which they were submitted to the UNFCCC. Global climate change science reveals that the earth is experiencing variances that are not constant or uniform (IPCCc, 2007; National Research Councilb, 2010). Moreover, the process of climate change adaptation is continually being formed (Blanco & Alberti, 2009, p. 163). Consequently, it would benefit the NAPAs program to see an evolution in the documents submitted (an evolution that would show a change in the adaptation methods being proposed and a change in the understanding of the climate change science) toward stronger programmes of action that address the needs of the poor and biodiversity preservation.

Although the methodology described would permit an assessment of NAPAs in various ways in order to determine how they are meeting the needs of the poor and of biodiversity preservation, there are several limitations to this research and conclusions. First, although the research evaluated all of the African NAPA documents, evaluating the documents themselves does not reveal the entire planning process. Even though there are sections within the NAPAs that refer to the type of participation that took place, as well as lists of the groups/participants that were involved in the development of the NAPAs, assessing the written documents does not validate the information stated within the documents themselves. Consequently, it is not possible to assess the true inclusiveness of the planning process (an important evaluation piece, as identified in the plan evaluation literature [Laurian, 2004, p. 53; Brody, 2003c, p. 409]). A survey could be used to obtain a better understanding of the inclusiveness of the planning process. Another limitation is the subjectivity of the coding in the plan assessment, conducted by one researcher. Additional coder(s) and evaluator(s) could minimize this limitation. A third is the choice to weight criteria equally, which creates an inherent bias based on quantity of measures in each category. This could be corrected by determining which criteria would have a greater impact on the livelihoods of the poor and the preservation of biodiversity, and weighting these criteria with a higher point value.

Despite these limitations, this research generates a replicable best practices standard for NAPAs. Through this research and assessment of National Adaptation Programmes of Action, Least Developed Countries will be better informed on adaptation

plan development approaches to reduce the vulnerabilities of the poor and the species necessary to maintain biodiversity.

RESULTS: African NAPAs

The results of the assessment conducted of the 32 African LDCs' NAPAs reveal varying degrees of plan quality, generally, as well as varying degrees and practices being promoted by LDCs to prepare for climate change. Particularly, the assessment discloses a range of actions taken that protect the poor and maintain biodiversity. There were various ways in which the NAPAs were assessed: 1) generally, to determine which countries scored the highest and lowest overall, 2) by criteria from the matrix to determine which NAPAs scored the highest in each of the criteria, 3) based on geography (creating two sub-categories: coastal countries and land-locked countries), 4) based on region (using United Nations classification of five different African regions), 5) based on the 2007 per capita Gross National Income, 6) based on percentage of the population that is female, and 7) based on the NAPAs' submission timeline. (The Methodology section provides an explanation for picking these approaches to assess the NAPAs.)

Assessment Results

The assessments conducted of African NAPAs submitted to the UNFCCC reveal several similarities and differences between the countries and regions. Although the United Nations has established guidelines of what should be included in the NAPAs, and these guidelines have resulted in similarities between the NAPAs in terms of the outline, presentation, and content, significant differences emerge across the countries and regions. Furthermore, there are certain results that point to areas of concern in the

information that is included in NAPAs. Some of the findings imply the need for altering or, at least, reviewing the United Nations guidelines for the NAPAs. In order to be well prepared for the effects of climate change, the Least Developed Countries should include the various criteria, as identified in the literature on most effective methods and practices to adapt for climate change. Once again, if the current UN guidelines are not leading to the formation of NAPAs that adequately include the necessary criteria for adaptation, it is possible that the guidelines may need to be revisited in order to satisfactorily address the needs of the poor and biodiversity preservation.

With a maximum value of two points per criteria, coastal countries could receive a score up to 28 points for their assessed NAPAs. Criterion number 11, offering incentives or requiring individuals to move from the shoreline or developing structures that can adapt to rising sea level, was removed for land-locked countries, bringing the maximum score for these countries to 26 points.

Figures 7 and 8 show the scores obtained by each country for each of the criteria, as well as the total scores for each country. The tables show that out of the coastal countries, the Union of the Comoros received the highest score of 22 out of 28, while Liberia received the lowest score of 9 out of 28 possible points. The Union of the Comoros was generally very detailed. The Comoros received nine 2's out of the 14 possible categories. Some of the distinguishing characteristics of the Comoros' NAPA include a detailed list of species (including numbers of endemic and endangered species), as well as a chart displaying a fact base of population numbers to show

percentages that live in the coast, in poverty, employed, and in various economic sectors. In the section describing how the NAPA development process was carried out, it states that 1,000 people were surveyed to prioritize impacts of climate change. The Comoros scored 1's on four different criteria including the protection of endangered and threatened species through the preservation, protection, and establishment of habitat corridors; the actual preservation and protection of habitat corridors; offering incentives or requiring individuals to move from the shoreline or developing structures that can adapt to rising sea levels; and including clearly stated methods and timelines for monitoring progress and reassessing the situation. The Comoros scored a 0 on one criterion: policies that take into consideration water access and quality, while allowing for flexibility (this was one criterion where numerous countries scored a 0).

Liberia, on the other hand, received the lowest score for coastal lying nations. With a score of 9, Liberia's NAPA received 2's for three criteria: training communities in new workforce skills or better practices that incorporate readiness for climate change; evidence of stakeholder participation (to include representation by the community) in the development of goals and vision; and its adaptation policies refer to or are linked to existing national plans and programs, as well as international programs. Liberia also received 1's for three other criteria: evidence of coordination between different levels of government, as well as with the community generally; offering incentives or requiring individuals to move from the shoreline or developing structures that can adapt to rising sea level; and clearly stated monitoring methods and timelines for monitoring progress

and reassessing the situation. The remaining eight criteria received 0's. Reference is made to the civil war in Liberia, which ended in 2003, and which created a setback in many of the development efforts taking place in the nation. It is possible that the civil war also had an influence on technical capacity and information readily available in the nation, making the formation of the NAPA more challenging. (The NAPA was submitted in July of 2007.)

Coastal Countries	1: Database listing threatened species	2: Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	3: Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	4: Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	5: Protect water sources to ensure water quality and quantity	6: Train communities in new workforce skills or better practices that incorporate readiness for climate change	7: Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	8: Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	9: Preserve & Promote habitat corridors	10: Policies that take into consideration water access and quality, while allowing for flexibility	11:Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	12: Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	13: Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	14: Implementation strategies and outcomes should be both short-term and long-term	Maximum Score: 28
Angola	1	1	2	1	0	2	1	1	0	0	0	2	0	1	12
Benin	0	1	2	2	2	2	2	2	1	0	0	2	2	0	18
Cape Verde	0	2	2	1	2	2	1	2	1	0	1	2	1	2	19
Comoros, Union of the	2	2	2	1	2	2	2	2	1	0	1	2	1	2	22
Congo	0	1	2	2	0	2	2	2	2	0	0	1	1	1	16
Djibouti	0	1	2	0	2	2	2	2	1	0	0	2	1	1	16
Eritrea	0	1	1	1	2	2	2	2	1	0	0	2	1	2	17
Gambia	1	0	2	0	2	2	2	1	1	2	1	1	1	1	17
Guinea	0	0	2	1	2	2	2	2	2	0	0	2	1	0	16
Guinea-Bissau	2	1	1	0	2	2	2	2	0	0	0	2	1	0	15
Liberia	0	0	0	0	0	2	1	2	0	0	1	2	1	0	9
Madagascar	0	1	2	0	2	2	2	2	1	2	0	2	1	1	18
Mauritania	0	2	1	1	2	2	1	1	0	0	0	2	1	0	13
Mozambique	0	1	2	1	2	2	1	2	0	1	2	1	0	2	17
Sao Tome and Principe	0	1	2	0	2	2	1	2	1	2	2	1	1	1	18
Senegal	0	1	2	0	2	2	2	2	1	0	1	2	1	0	16
Sierra Leone	0	1	2	0	2	2	2	2	1	0	1	2	0	2	17
Sudan	0	1	2	1	2	2	1	2	1	1	0	2	0	1	16
Tanzania	1	1	2	0	2	2	2	2	0	0	0	2	0	1	15
Togo	1	2	2	0	2	2	2	2	1	0	0	1	2	1	18
Averages	**0.40**	**1.05**	**1.75**	**0.60**	**1.70**	**2.00**	**1.65**	**1.85**	**0.80**	**0.40**	**0.50**	**1.75**	**0.85**	**0.95**	**16.25**

Figure 7: Coastal Countries: Individual Criteria Scores, Averages, and Total Scores

Landlocked Countries	1: Database listing threatened species	2: Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	3: Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	4: Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	5: Protect water sources to ensure water quality and quantity	6: Train communities in new workforce skills or better practices that incorporate readiness for climate change	7: Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	8: Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	9: Preserve & Promote habitat corridors	10: Policies that take into consideration water access and quality, while allowing for flexibility	12: Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	13: Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	14: Implementation strategies should be both short-term and long-term	Maximum Score: 26
Burkina Faso	0	1	2	2	2	2	2	2	1	0	2	1	2	19
Burundi	0	1	2	1	2	2	2	1	1	0	2	2	2	18
Central African Republic	0	1	2	1	1	2	1	2	1	0	2	1	1	15
Chad	0	1	2	0	2	2	2	2	0	0	2	2	0	15
Ethiopia	0	1	2	0	2	2	1	1	0	1	2	1	1	14
Lesotho	0	1	2	1	2	2	2	1	1	2	2	1	2	19
Malawi	0	0	1	0	2	2	2	2	0	2	2	1	1	15
Mali	0	1	2	0	2	2	2	2	2	0	2	2	0	17
Niger	1	1	1	0	2	2	2	2	0	0	2	2	0	15
Rwanda	0	1	2	0	2	2	1	2	0	0	2	1	0	13
Uganda	0	1	2	0	2	2	2	2	0	2	2	1	2	18
Zambia	0	1	2	1	2	2	2	2	0	0	2	1	1	16
Averages	**0.08**	**0.92**	**1.83**	**0.50**	**1.92**	**2.00**	**1.75**	**1.75**	**0.50**	**0.58**	**2.00**	**1.33**	**1.00**	**16.17**

Figure 8: Landlocked Countries: Individual Criteria Scores, Averages, and Total Scores

In addition to coastal nations, which could receive maximum scores of 28, landlocked nations were divided into a subsection since they were not evaluated by one of the 14 criteria (offering incentives or requiring individuals to move from the shoreline or developing structures that can adapt to rising sea level). A total of 12 landlocked nations were assessed. Out of the twelve, two nations tied with the highest scores, 19 points out of a maximum of 26. These two nations are

Burkina Faso and Lesotho. Burkina Faso scored 2's in eight criteria; Lesotho scored 2's in seven criteria. Burkina Faso is one of the few countries that addresses the protection of endangered species through the preservation, protection, and/or establishment of habitat corridors. The NAPA speaks specifically about certain species in danger and states how some of the projects will address this threat through the preservation of ecosystems. Another strong characteristic of the NAPA is the description given to stakeholder participation. It states that the country was divided into zones, and five of the zones were selected to conduct research. Surveys were submitted to individuals within each of the zones. A total of 56 villages were surveyed. The NAPA also specifically states that in order to ensure that the needs of women were addressed, they mandated that woman representatives were present in each of the expert groups. Lesotho includes maps showing specific areas of vulnerability by location, based on several criteria taken into consideration. As a component of the information provided to demonstrate coordination between different levels of government and other sectors of the community, a diagram is included that shows the different roles that each of the different parties took and will take. This section specifically shows how national government levels were involved, as well as representatives of local governments and other non-government groups. One of the criteria used within the Lesotho NAPA to prioritize the projects is how much synergy exists between the proposed project and current plans and programs that are in place. Furthermore, one of the actual projects proposed is geared at incorporating issues of climate change into current plans and

policies. The areas in which these two NAPAs were weak were somewhat similar. Both Burkina Faso and Lesotho scored 0 for omitting to include a database listing threatened (or any species). Burkina Faso also received a 0 for not referring to or creating policy for water access and quality.

The country that received the lowest score out of all the landlocked countries was Rwanda, which received a score of 13. The NAPA obtained five 2's, three 1's and five 0's. The NAPA scored high in determining its vulnerabilities, protecting its water sources, training its community or promoting better practices adapted to climate change, involving different stakeholders, and referring to or linking the NAPA to current plans and policies. However, it received the lowest score for failing to include projects that would protect endangered species through the protection of habitat corridors, omitting policies that address water resources, and failing to state implementation stages by short- and long-term actions. Reference is not made to the nation having come out of war, but it is interesting that similar to Liberia, which scored low for its group, Rwanda also experienced a devastating civil war (officially ending in 1993). (The NAPA was submitted in December, 2006.

In addition to the differences seen between the highest and lowest scoring NAPAs in both coastal and landlocked subcategories, there are also dissimilarities observed within each of the criteria. The first criterion measured is whether the NAPAs include a database listing threatened species. The continent of Africa is one rich in

species and biodiversity. In fact, many of the nations' economies depend largely on tourism based on species diversity and natural environments.

These are some of the countries that address this criterion and the type of actions that they are taking:

- Angola: no actual database, but it does list nine different endangered species.
- Union of the Comoros: includes a table of the different types of species present in the islands; the table differentiates between the number of species that are endemic and those that are endangered.
- Mozambique: proposes to create an inventory of the different plant species in the nation.

Although several of the NAPAs reference the richness of species found in the countries, as well as the dangers faced by species and ecosystems, the majority of NAPAs do not include a database listing threatened species. Only seven out of the 32 nations include some kind of list or table of species (not necessarily and specifically pointing out the endangered species). Each of these lists are different – some listing actual endangered species and others simply listing the numbers of different types of species found in the country. Within the landlocked countries, only Niger included some sort of list. This list includes the numbers of different types of species (numbers for flora, mammals, birds, reptiles and amphibians, and fish). However, it does not specifically list endangered species. Out of the coastal countries, only six countries included lists. Again, the majority of these were lists similar to Niger's (not specifically

listing the endangered species). The country of Comoros is an exception in that it includes not only a list of the types of species that are present (and their numbers), but also contains information to show how many species are endemic to the islands and how many are endangered.

There are additional details on the type of information included in the NAPAs under this first criterion. The seven countries that include a list of species are Angola, The Union of the Comoros, Gambia, Guinea-Bissau, Niger, Tanzania, and Togo. Angola does not have an actual database, but it lists nine different species that are currently endangered. Although these species are listed, none of the priority projects included in the NAPA address this threat. The Union of the Comoros includes a statement that the richness of its species is very valuable to the nation, that it offers "originality" and that the variety of ecosystems available in the archipelago nation (mangroves, beaches, coral reefs, and marine herbariums) are crucial to its tourism industry. It further includes a table that lists the number of different species that are present, as well as how many of those species are endemic (Comoros is ranked among the 20 archipelago island nations characterized by its endemic diversity). Out of the different priority projects, the project that would take action to preserve these ecosystems is one that focuses on protecting endangered tree species and the other species that reside within the forests. However, other than this project, none of the others focus on species preservation or protection. Gambia lists several species that are endangered as a result of rapid sea level rise (these are species residing in mangroves, which would be the ecosystems affected by sea level

rise). One of the projects includes reference to regenerating forests, but the project focuses on agro-forestry practices and supplying the community with domesticated species. Guinea-Bissau includes a more detailed list of species. Although the list does not specifically list endangered species, it does divide species by types and states that the nation accounts for one percent of the world's bird species. Furthermore, it states that flora and fauna species are currently endangered because of degradation to forest ecosystems; nevertheless, none of the priority projects address this concern. Niger, similar to the other lists mentioned, includes a list with the numbers of different types of species, but no specific reference to endangered species. Further in the program, mammals are referenced as being particularly threatened due to habitat destruction. However, none of the projects address protection of these species specifically through habitat preservation. Tanzania lists the numbers found of different types of species. One of the proposed activities of this NAPA was to create a wildlife informational database. This activity, however, was ranked fourth for all the wildlife activities, so it was not one of the top activities to actually be presented. There were other references made to preservation of migratory bird corridors. However, this activity was also ranked low by participants, so it was not one of the activities actually presented as part of the priority projects for the NAPA. Togo lists a few species that are rare. Not much additional detail is provided. There is one project that seeks to protect the coastline, to include protection of mangroves. However, there is not a clear connection between this habitat and the species mentioned earlier in the NAPA.

In order to be able to protect specific species, they must first be identified. The effects of climate change pose threats on the habitats of and on the species themselves. It is concerning that out of the 32 NAPAs only seven make reference to the species that are present, and out of these, only a few are referring to actual endangered species. It will be difficult to maintain biodiversity without first identifying the diverse forms that are present and that must be preserved. One method of maintaining biodiversity is through the protection and restoration of habitat corridors and linkages. Species that require conservation must be identified before their corresponding habitats can be preserved. Additionally, the literature on plan evaluation points to the importance of a strong factual basis (Berke, Godschalk, and Kaiser, 2006, p. 70). A strong factual base can serve as the foundation for policy (Brody, 2003b, p. 517). As the NAPAs serve to communicate climate change adaptation needs to policy makers, they need to contain a strong factual basis from which policy makers will then make further decisions. Moreover, the United Nations established that the NAPAs should consider the economic and social needs, as well as the environmental concerns of the LDCs (UNFCCCa, 2011, p. 10; Huq, S., Rahman, A., Konate, M., Sokona, Y. & Reid, H., 2003, p.6). One of the essential steps of safeguarding the environmental concerns is that of identifying what these concerns may be. Subsequently, without the species' factual basis, the NAPAs may not adequately address biodiversity preservation.

The second criterion was the inclusion of a fact base identifying numbers of the population by location (i.e. along the coast, by rivers, etc.). Almost all of the plans (28

out of 32) include some level of description of the population. However, the majority of these are a simple statement of the total country population, usually followed by a percentage of the population that lives in rural or in urban areas.

Although the majority of countries do not give detail on the population characteristics in regard to their location, there are four exceptions:

- Cape Verde: adds additional information by stating that 80% of the population lives along the coast.
- The Union of the Comoros: includes a chart listing the percentages of the total population that live in rural and urban areas, along the coast, in poverty and not in poverty.
- Mauritania: includes an explanation that the density of inhabitants increases from 0.4 inhabitants per square kilometer in the northern desert area to 20 in the south and Senegal River valley. It also states that 22% of the country's entire population lives along the Atlantic coastline (less than one percent of the country's total surface area). Togo: states that 60% of its population lives in forested areas, and 500,000 people live in the coastal zone.

The nations of Gambia, Guinea, Liberia and Malawi do not include any information on the location of their respective populations.

Just as a species fact base can help policymakers decide on actions to preserve these species and their habitats, a population fact base is similarly important for

policymaking to protect the poor. The literature emphasizes the vulnerability faced by populations living within the coastal zone (Mimura, 1999, p. 137; Pilkey & Young, 2009; Oliver-Smith, 2009, p. 9). Policy decisions therefore should include action to protect individuals living in these areas. Without an accurate accounting, it will be difficult for policymakers to create policy that adequately addresses these weaknesses. The NAPA guidelines state that the poor living in the LDCs are the most vulnerable and in need of extra protection, which is the purpose for the NAPAs. They should "enable LDCs to treat some of the underlying causes of their vulnerability" (UNFCCC, 2002, p. 1). Yet, without first identifying where the poor and populations are living in the countries, it will be difficult to address these vulnerabilities.

The third criterion is that of developing local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.). This is one of the criteria that displayed numerous countries with 2's. All but six countries obtained a 2 for this criterion. Five of the six countries obtained 1's and only one country, Liberia, obtained a 0 under this category. In general, the NAPAs were very detailed in identifying climate change impact projections. These impact projections were stated as vulnerabilities that would affect different sectors of the country (water, agriculture, coastal zones, etc.). Additionally, the NAPAs sometimes state current precipitation and temperature trends, and several also list projections based on specific climate change models. The differences between those that scored 1 versus 2 are based on the amount of detail given within the sections and whether the NAPAs include one or

both of these types of projections (temperature/precipitation projections and sectoral vulnerabilities). Liberia is the only nation that makes no reference at all to either of these forms of projections or vulnerabilities (a lower-scoring NAPA in other criteria as well and overall).

This third criterion is an area in which the NAPAs generally do a good job. The literature stresses the importance of a solid fact base in plans (Berke, Godschalk, and Kaiser, 2006, p. 70), and this is one criterion and information that is present in the NAPAs generally (with the exception of one). Furthermore, the NAPAs display comprehensiveness and coverage of multiple sectors; these are both characteristics of effective adaptation plans (Blanco & Alberti, 2009, p. 155). Identifying these vulnerabilities is the first step in determining the appropriate steps that will then be necessary to ensure that the vulnerabilities are reduced or eliminated (Blanco & Alberti, 2009, p. 160). The findings for this criterion are positive reflections of the NAPA guidelines and the plan making that is taking place in the African LDCs.

The fourth criterion is that of protecting endangered and threatened species through preservation, protection, and establishment of habitat corridors. The actual term "corridor" was rarely used in the NAPAs. However, some of them include projects that would restore or protect different ecosystems. Fifteen nations incorporate actions/projects that would provide for the preservation, protection or establishment of ecosystems and habitats (though not specifically referring to "corridors").

The countries listed below are representative of the actions that are being proposed within NAPAs that would protect or establish habitats:

- The Union of the Comoros: afforestation, the general protection of endangered tree species.
- Benin: restoration of mangroves.
- Lesotho: protection of wetlands.
- Zambia: protection for the natural regeneration of forests.

For the most part, however, references for the protection, preservation and establishment of ecosystems are vague (again, few stating actual "corridor" preservation, and vague in general to the effects the actions will have on the protection of endangered species). Perhaps most concerning is that there are seventeen nations (the majority out of the 32) that do not include any projects that address the protection, preservation or establishment of habitats.

The prevalent omission of these kinds of projects is concerning for several reasons. One of the characteristics of Least Developed Countries is their level of vulnerability, due to lack of financial and technical resources (Hardee & Mutunga, 2010, p. 114; Huq, S., Rahman, A., Konate, M., Sokona, Y., & Reid, H., 2003, p. 6; Blanco & Alberti, 2009, p. 159). They are countries whose economies are largely based on agriculture, tourism (based on their natural resources), and fisheries and are generally subsistence economies (UNFCCC, 2011, p. 12). Failing to address the protection and preservation of ecosystems, as well as the maintenance of biodiversity, would have

serious consequences for the livelihoods of these communities. A reduction in the biodiversity present in these nations would be harmful for food availability, as well for the supply of medicine and natural ecosystem function (Gunningham & Young, 1997). A disruption in natural ecosystem processes would be perilous for the economies of these nations, which are based on natural systems.

Additionally, maintaining biodiversity will improve environmental resilience (Folke, Carpenter, Elmqvist, Gunderson, Holling & Walker, 2002, p. 437), which is a characteristic necessary when climate change generates much uncertainty. The literature points to the importance of maintaining intact and connected habitats to preserve biodiversity (Beatley, 2000, p. 8). Corridors are essential because they improve connectivity.

Although some of the NAPAs currently include projects that aim to restore or protect ecosystems and habitats, these projects should also specifically aim to maintain connected and intact corridors. The NAPA guidelines recognize the interconnection between climate change, alterations in biological diversity and desertification (UNFCCC, 2002, p. 12). Subsequently, the finding that NAPAs predominantly display a lack of projects that protect natural ecosystems is concerning. Moreover, it is concerning that the plans do not include reference to corridors (a specific method identified as being effective for biodiversity preservation). These findings speak of the need for more stringent guidelines favoring and possibly requiring actions for the preservation of natural ecosystems.

The fifth criterion is to protect water sources to ensure water quality and quantity. Out of the 32 countries, only three did not include projects that would protect water sources to ensure water quality and/or quantity. These three nations are Angola, the Democratic Republic of Congo and Liberia. All the other countries incorporate at least one project that addresses water protection for quality and/or quantity.

The following countries are representative of the types of actions that are being promoted by the LDCs to care for water:

- Mauritania: construction of dams, promotion of water-saving techniques in oasis zones, and improvement of underground water management techniques.
- Burundi: establishment of buffer zones around water sources.
- Cape Verde: construction of infrastructure to collect and store water.
- Eritrea: enhancement of ground water recharge.

The inclusion of projects, attention and detail given to projects concerning water reflect the recognition of the gravity faced by these nations should their water sources be compromised.

The LDC's, whose economies are largely based on agriculture and fisheries, require water quality and quantity to meet their needs for survival. Climate change poses dangers to the supply of water as well as to the quality of freshwater infiltrated by saltwater (UNFCCC, 2002, p. 20; Hansen & Hoffman, 2011, p. 13). The steps the NAPAs are stating and the projects proposed serve as a way to make certain that these

communities and countries will have the necessary amount and quality of water for basic needs.

The sixth criterion is to train communities in new workforce skills or better practices that incorporate readiness for climate change. This information is found in every NAPA. Every NAPA received a 2 for this category due to the extensiveness of projects related to new skills or improved practices (projects related to this criterion are the most detailed). Often these projects encourage new or different agricultural practices (yielding greater crops or being water efficient). However, there are other skills and practices that are also included in the NAPAs.

These following countries and their proposed projects are representative of the actions seen in the NAPAs:

- Mauritania: development of domestic poultry farming.
- Angola: promotion of cultivation techniques for increased water retention and erosion prevention.
- Cape Verde: promotion of micro-credit for business start-ups.
- Eritrea: promotion of the use of certain breeds of sheep and goats that are better suited for harsh climate conditions.
- The Union of the Comoros: introduction of Fish Concentration Mechanisms as a new method of fishing in order to increase catches.

- Ethiopia: the establishment of national climate research centers that will provide data and projections to help communities prepare for climate changes.

The projects proposed are numerous and distinct by country and need (See Appendix C for more specific detail on the projects proposed by each country).

The extensiveness of the projects that train communities in new workforce skills or better practices that incorporate readiness for climate change reflect the acknowledgement that climate change will pose challenges to the livelihoods of these communities, which depend on natural systems (National Research Council, 2010, p. 187; IPCC, 2007). These projects are a good step toward preparing the communities, particularly the poor, by training them in new skills that may not depend on natural systems (such as projects that support micro-lending to start new businesses) or in better practices that would be more efficient in the face of effects of climate change (such as projects that promote different agricultural methods, including training in small-scale irrigation schemes).

The seventh criterion was to determine whether there was evidence within the NAPA of coordination between the highest levels of government and local governments, as well as with the community generally (including the private sector). All of the NAPAs showed some level of organization between different levels of government and with other sectors. The NAPAs mention a couple of distinctive activities relating to this criterion. In some cases, the national government designated a coordinating committee

to undergo the task of developing the NAPA. Additionally, there is discussion of specific ministries within the government that were involved in the process. NAPAs explicitly indicate that local governments were also involved. All NAPAs allude to coordination with the community, generally (the precise community participation is further explained under the eighth criterion). The difference in the scores for the NAPAs under this criterion is, for the most part, based on the level of detail describing the level of governmental coordination. When detail is missing to explain the exact coordination that took place, NAPAs received a 1. Other NAPAs include lists of groups and governing levels that were involved in the creation of the document; and these received a 2. Additional details on community participation are explained in the following criterion.

The findings, which show that governmental coordination took place, reflect one positive aspect of the NAPAs' development process. The literature points to the importance for planning at the community and sectoral levels (Blanco & Alberti, 2009, p. 166). By involving the various segments of government and diverse ministries within the government, it is more likely that the plans will address the needs of the many sectors. Furthermore, the involvement of the government increases the likelihood that it will support projects and initiatives that address the country's vulnerabilities since it was involved in their formation. The NAPAs could be stronger in giving more detail to describe interaction and coordination with local government bodies. Local governmental bodies have a greater understanding of the precise needs of their

communities. Together with the support of the national government (institutional, technical, and financial), localities may be better suited to address community needs.

The eighth criterion is evidence of stakeholder participation (to comprise representation by the community) in the development of the NAPA goals and vision (including indigenous input). Once again, all NAPAs contain indication of stakeholder participation in the development of goals and vision. The type and level of participation specified in the documents varies. For example, some NAPAs state that experts were first consulted to determine vulnerabilities, which were then presented to the community (this is the case of Mauritania's NAPA). Other NAPAs mention first consulting the local community to have them determine their own vulnerabilities, and subsequently combining this information with what experts found. Specific methods used to consult communities include surveys and workshops (though not all NAPAs state how communities were consulted exactly). Some NAPAs list the different groups that were consulted. Some also delineate the actual number of people surveyed (i.e. 1,000 in the Union of the Comoros) or the number of people that participated in workshops. When NAPAs make a general statement that stakeholders were consulted, and outline the different stakeholders (i.e. government groups, industry and business representatives) but do not include the "community" or the "public," a "1" was given.

On the other hand, NAPAs that gave reference to the general public and also provided additional detail on the type of participation undertaken received a 2. One NAPA with a "2" is Uganda, which goes into a lot of detail on the type of participation

(interviews and surveys) and includes a statement that, where necessary, men and women were separated in order to ensure women's participation. There are some other ways in which community involvement is demonstrated in the NAPAs. First, this involvement is described as occurring at two levels. In some NAPAs it took place at the beginning, when communities were given an opportunity to determine their vulnerabilities, their priorities, and their proposed adaptation methods. In other NAPAs, communities were consulted after experts in various fields first determined the vulnerabilities. In these NAPAs the population was brought in to verify the experts' findings.

The literature states that adaptation plans can be strengthened when combining stakeholder input and combining it with empirical data (Hansen & Hoffman, 2011, p. 112). Unfortunately, there still exist social structures in many countries that exclude women and young children from community input and decision-making opportunities (Kalame, Kudejira, and Nkem, 2010, p. 541). It is encouraging, therefore, to find that NAPAs generally make reference to stakeholder participation, and that some also specifically mention women's involvement. It is possible, however, that the NAPAs did not fully list or describe the type of consultation and participation that took place. The scope of this research did not permit confirmation of the full planning process. Additional research may have been able to determine whether higher scoring NAPAs obtained consultation from international experts compared to lower scoring NAPAs that may have developed their documents completely internally. Nevertheless, it is a

positive result to see that all NAPAs at least refer to and provide some information on the type of community participation that took place.

The ninth criterion served to identify projects that preserve and promote habitat corridors. The findings for this criterion are similar to those of the fourth criterion. There are projects that include activities that would preserve and promote habitat corridors, though the term "corridor" is not specifically mentioned. Although several of the NAPAs include some form of conservation/restoration project, there are 13 out of the 32 NAPAs that do not. These nations received 0s for this criterion. Sixteen countries received a 1, and three received a 2. Countries that received a 2 are the Democratic Republic of Congo, Guinea, and Mali. These countries make specific reference to the projects' goals of preserving ecosystems and biodiversity.

- The Democratic Republic of Congo: seeks to protect a specific mangroves park by promoting community education on the importance of preserving this area.
- Guinea: will protect the coastal zone by reforesting areas that have been degraded; will also protect spawning areas within estuaries.
- Mali: seeks to protect its environment through anti-erosion techniques, reforesting, and restoration and protection of dunes.

Some of the other projects listed by the various NAPAs include preservation of forest ecosystems, restoration of mangroves, preservation of coastlines, rehabilitation of dunes, more general reforestation, community education on the importance of

conservation, and the establishment and reinforcement of institutions that manage conservation. Additional types of action taken to preserve corridors includes a project stated in Guinea's NAPA where studies will be carried out to determine what endogenous actions are currently taking place in the nation to protect ecosystems. Once these are determined, action will be taken to spread the activities to other regions of the country.

This research also revealed that some of the NAPAs mention a concern about losing habitats and species, or even include initial project lists that consist of habitat preservation activities, but the final project lists do not include habitat protection activities. One such example is Tanzania, in which the NAPA has an initial project list that contains one activity that would develop migratory corridors and buffer zones for wildlife species. However, after the ranking was carried out, this project did not become one of the priorities because of its ranking. Another example is that of Guinea-Bissau's NAPA, which makes reference to a program that was in place from 2000-2006. This program had the purpose of protecting corridors for wild fauna. There is, however, no priority project listed in the actual NAPA that would further promote protection or preservation of corridors.

Once again, because of the importance of the natural systems for the economies of these nations, it is concerning to find that 13 out of the 32 do not include projects that would protect or preserve habitats, and that few nations mention the word "corridor." The revelation that some lists initially contained activities that promoted the

preservation or protection of habitats and corridors but that these projects did not make the final priority list points to the need for further education. Education is necessary both at the governmental level as well as at the community level to explain the importance of preserving the environment, habitats, and corridors specifically. Activities that train the communities in skills and practices that would be less dependent on natural systems are vital as well, but these need to be partnered with activities that would still protect the environment on which the communities rely. In addition to further education, these findings point to the need to revise the NAPA guidelines so that they include a requirement that a certain minimum percentage of the priority projects specifically aim for the preservation and promotion of ecosystems and natural systems. If the current guidelines, which make a statement about the need to incorporate sound environmental management, do not result in projects that preserve and promote natural systems, then a requirement of a specific percentage may be necessary.

The tenth criterion includes policies that take into consideration water access and quality, while allowing for flexibility. Only nine out of the 32 NAPAs refer to current water policy or include projects that would create or move towards the establishment of policies related to water access and quality. The other nations generally include projects that would protect water sources (see criterion number five), but no policies, which would be more long-term and provide guidance and management of water resources. Three NAPAs received a 1 for making reference to *current* water policies and

laws. The other six NAPAs received a 2 for actually proposing the creation of water policies within the priority projects.

An interesting and concerning finding is one from Eritrea's NAPA. This NAPA states that part of the difficulty in establishing the programme is the lack of environmental laws and regulations (including water laws). However, this nation does not include projects or make reference to projects that would contain actions moving toward policy formation. One of the purposes of the NAPAs is to identify the nations' vulnerabilities and propose actions to address these weaknesses. These actions should incorporate sound environmental management (UNFCCCb, 2002, p. 9), which would include policy to provide the necessary management. Promoting and proposing projects solely without policy will result in the lack of long-term guidance for actions that effectively protect these nations against the effects of climate change. These findings suggest that countries are developing short-term projects but are not creating plans that will be able to address longer-term effects. Short-term, piecemeal projects will protect the communities immediately, but in the long-term, without policies that form a framework for future actions, the poor and the ecosystems sustaining biodiversity may both face even more perilous futures.

The eleventh criterion is one applied only to coastal nations. This criterion measures whether the NAPAs include projects that offer incentives or require individuals to move from the shoreline, or that develop structures that can adapt to rising sea level. There are twelve landlocked countries that were not included in this

count. Out of the remaining twenty, only eight include projects offering incentives, requiring individuals to move from the shoreline, or developing structures that can adapt to rising sea level. One of the 12 nations that received a 0, Tanzania, lists all activities that were proposed during the early stages of the consultation process. One of these proposed activities is the relocation of people from the shoreline; however, this activity was not given priority later on, so it does not become an actual proposed project for the NAPA.

Of the eight nations that obtained points for this criterion, both Sao Tome and Principe and Mozambique were the only two nations that received 2's. Their NAPAs are distinguished from the others that received 1's for the specificity included in the projects. Both of these NAPAs particularly state the vulnerability faced by coastal communities and include projects that will take into consideration the displaced communities through the provision for relocation and new homes. Furthermore, Sao Tome and Principe's NAPA also includes a project that would construct infrastructure to protect the coastline and its residents.

The other six nations received 1's for including structural construction or improvements, but no mention of actions to relocate these coastal communities. These six NAPAs mention dangers of rising sea level and include a variety of actions.

The following is a list of some of the projects and actions proposed by these nations to address rising sea level:

- Cape Verde: generally states that infrastructure to protect coastal zones will be rehabilitated and/or constructed.
- The Gambia: proposes the improving defense of coastal areas through beach stabilization, groins, and the rehabilitation of wetlands.
- Sierra Leone: construction of jetties.

Liberia's NAPA includes a singular project and states that coastal and urban growth planning schemes will be implemented, for better protection of coastal populations. This statement is not further elaborated to know precisely what this means.

With the literature referring to sea level rise as having the "most immediate, the most certain, the most widespread, and the most economically visible" effects (Pilkey & Young, 2009, p. 4), it is troublesome that only eight out of the 20 nations include projects that would move communities from the shore, or would protect the communities through infrastructure construction. The NAPAs themselves do not specifically include the numbers from the general country population that reside in coastal zones, but the literature states that roughly 600 million people reside in coastal communities around the world (Oliver-Smith, 2009, p. 9). Perhaps if the NAPAs had included the identification of population numbers that reside in coastal zones more of the projects would have included activities that prepare these communities for the rapidly increasing rates of sea level rise. These coastal countries should not ignore the imminent effects of sea level rise and should develop programs of action that would

prepare communities for migration, as well as with necessary and appropriate housing and infrastructure. Without preventative programs such as these, the LDCs will likely face exacerbated financial and human life costs as a result of sea level rise.

The twelfth criterion is reference or linkage by NAPAs to existing national and international plans and programs. All NAPAs at least make reference to current national or international plans and programs. Out of the 32, five of the NAPAs received a 1 due to the vagueness in the sections that mention the national and international plans and programs. This includes either simply listing the programs and policies that are linked to the NAPA or not providing much detail about how the programs and policies are linked to the NAPA. The countries that received 2's incorporate additional detail in the description of the different plans and policies and state how these plans and policies relate to the NAPA. Within the countries that received 2's there were also some that prioritize the projects giving additional weight to projects that are linked to current policies or plans. Finally, other NAPAs that received a 2 specifically link each proposed project to an existing plan or program.

One of the ten guiding elements for NAPAs, as outlined by the UNFCCC, is to complement and build on existing national plans and programs (UNFCCCb, 2002, p. 9). This guiding element was established in part because of the concern that the LDCs would suffer setbacks to development goals as a result of the effects of climate change. It is hoped that by integrating existing national plans and programs to the NAPAs, the proposed programmes would be better able to simultaneously address climate change

vulnerabilities and the needs of the poor and women (Hardee & Mutunga, 2010, p. 116). Furthermore, these types of synergies between programs and multilateral agreements would mean less duplication of efforts, resulting in greater financial efficiency, and it would also result in generally more "effective environmental management" (UNFCCC, 2002, p. 13). The fact that all of the NAPAs include at least reference to various existing national and international programs is encouraging in regards to financial efficiency. However, some of these references are very vague and do not adequately show that there is a clear connection between current policies and these plans. It would be better to show how each of the projects is tied to or complementary of existing policies and programs to show that there is full integration and coordination between the various projects.

One of the two United Nations Conventions that is specifically mentioned in the NAPA guidelines as one that should be referenced and one with which NAPAs should show synergy is the UN Convention on Biological Diversity. The NAPAs generally refer to this convention, yet they do not specifically show how they are linked to it. As seen above, one weak section of the NAPAs is the omission of habitat corridors in their preservation efforts. Habitat corridors have been identified as being effective for biodiversity preservation. Perhaps, by making specific reference within every project to a national or international program and plan (including reference to the UN Convention on Biological Diversity), more actions for the preservation of biodiversity would be

observed in the NAPAs (including actions such as the protection and establishment of habitat corridors).

The thirteenth criterion relates to monitoring and whether the NAPAs clearly incorporate methods and timelines for monitoring progress and reassessing the situation. The majority of NAPAs, 21, received a 1; six NAPAs received a 2; and the remaining five received a 0. Nations that either did not include any reference to monitoring or were extremely vague (including a generic statement that was repeated verbatim in all the project descriptions) received a 0. Those that received 1's were NAPAs that included either the methods that would be used for the evaluation (including lists of indicators that would measure success) or timelines for when monitoring would take place. NAPAs received 2's if they included both of these items (methods and timelines) and also provided more detailed information on monitoring methods to be used. Generally, however, the monitoring sections were less extensive than other sections of the NAPAs.

There are several implications to these findings. According to plan evaluation and plan quality literature, monitoring is critical. Through monitoring, plans can be evaluated to see if they are meeting the identified needs and the defined goals (Berke, Godschalk, and Kaiser, 2006, p. 72). Additionally, monitoring can help determine whether there is a need to modify plans. The uncertainty of the actual effects of climate change stresses the importance of flexibility in the actions that are taken to address these possible effects. Since the activities undertaken to address climate change effects

will vary based on the context, it is vital that adaptation plans include clear monitoring procedures and indicators of success. Without clear monitoring procedures and without specific lists of items that will be measured to determine the success of projects, it will be difficult to assess whether the projects are addressing the effects of climate change and whether it is necessary to update the plans.

The fourteenth criterion measured the presence of implementation strategies and outcomes (both short- and long-term). Ten out of the 32 NAPAs received scores of 0 for not making reference to either implementation strategies or outcomes occurring in the short- and long-term. Nine of the NAPAs received 2's and the remaining 13 received scores of 1. The difference between the NAPAs that received scores of 1 and scores of 2 rests on the level of detail or vagueness for this criterion. Some NAPAs include sections that are subtitled within each project description to clearly state which are the short- and long-term strategies or outcomes. Others also include budgets that are broken down by into phases, by implementation year (showing what activities and costs will take place in the different years).

The literature posits clearly defined implementation as a critical component of internal plan quality (Brody, 2003b, p. 520). Implementation steps outline how a plan will be carried out and identify the responsible parties for the different actions that will be carried out. Without clear execution steps, it will be harder to keep responsible parties accountable for the projects that have been proposed. Moreover, NAPAs recommend projects that will need funding. Proposals requesting funds could be

stronger if the funders are able to clearly see who will be responsible for the different actions, as well as if there is clear evidence of long-term steps and results. Consequently, the NAPAs could be strengthened with the inclusion of more clearly stated short- and long-term implementation steps.

(In addition to the previous tables that demonstrate country scores for each criterion, Appendix A includes tables that group these criteria based on the areas that they address: concerns for the environment, the poor, and concerns for both the environment and the poor.)

Differences by Categories

The section above reveals findings and implications within the 32 African NAPAs for each of the criteria. Additional distinctions and implications were found when comparing results based on the following subgroups: 1) based on geography (creating two sub-categories: coastal countries and land-locked countries), 2) based on region (using the United Nations classification of Africa into five regions), 3) based on the 2007 per capita Gross National Income, 4) based on the percentage of the population that is female, and 5) based on the NAPAs' submission timeline.

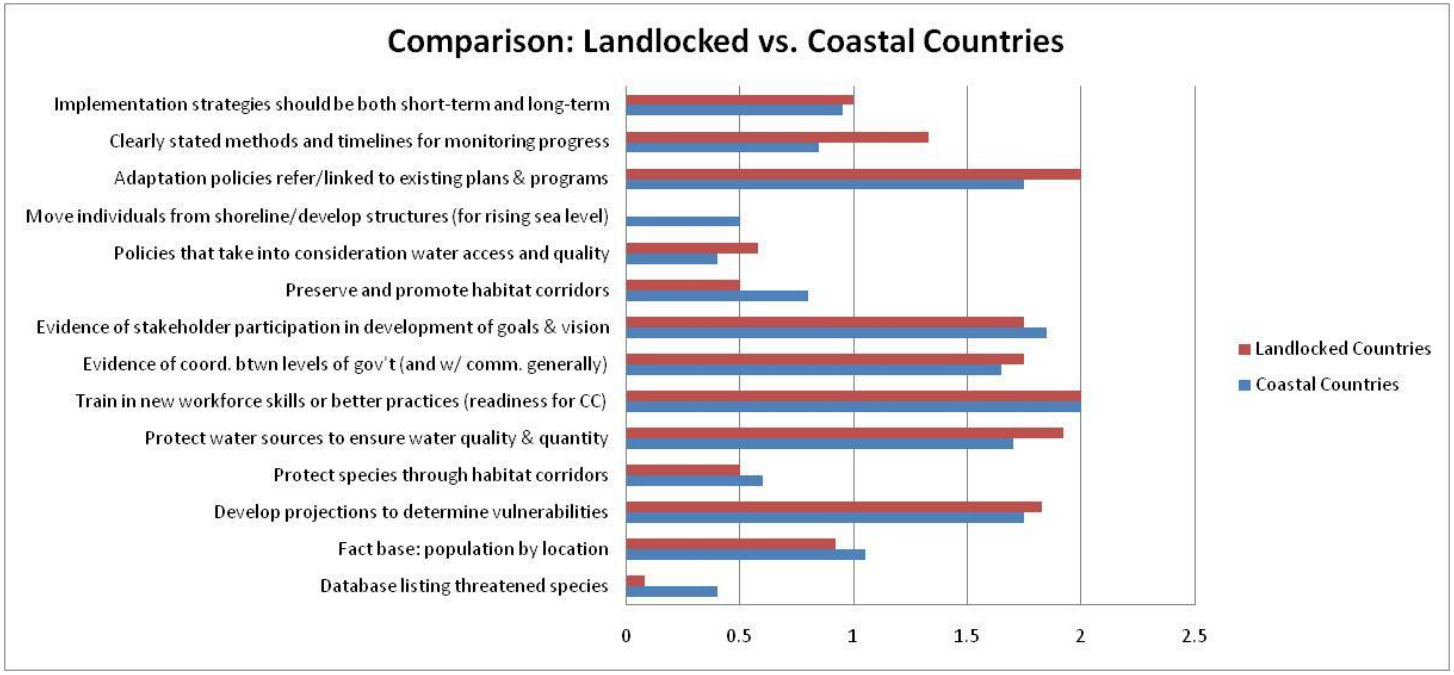
Based on Geography

A subset of the landlocked countries was established since one of the criteria was specific to countries with access to the ocean. In order to determine differences between landlocked and coastal nations, scores for each category were averaged (see Figure 6). The chart and table below show that there were some differences between

the two subgroups, but they are minimal. For the most part, landlocked NAPAs scored close to or similar to coastal NAPAs.

The areas that showed the greatest differences were in the following categories: database listing endangered species, projects that preserve and promote habitat corridors, and clearly stated methods and timelines for monitoring progress. Both coastal and landlocked countries scored low on the inclusion of databases listing endangered species; however, coastal countries scored slightly higher at 0.4 versus 0.08 for landlocked countries. Similarly, coastal countries scored slightly higher for the inclusion of projects that preserve and promote habitat corridors (0.8 versus 0.5 for landlocked countries). Both of these results suggest a slightly stronger focus by coastal countries on the preservation of natural systems. However, it is important to remember that these differences are not extremely large. The last category where a greater difference between coastal and landlocked countries is observed is for the criterion of clearly stated methods and timelines for monitoring progress. Under this criterion, landlocked countries scored a higher average of 1.33 than did coastal countries, with an average of 0.85. Both landlocked and coastal countries alike are faced with precarious climate change effects; consequently, both should include clear methods and timelines for monitoring the progress of actions/projects. In so doing, these nations will be better able to change direction or methods being taken to address climate change effects, should these be found to be less than efficient. Coastal countries face added vulnerabilities from climate change, such as saltwater infiltration into freshwater

sources, dangers to infrastructure located in the coastal regions, and possible harm to residences of coastal communities. These added vulnerabilities point to the need for even more intensive monitoring for coastal nations. Monitoring permits governments and other implementing bodies to determine if actions need to be reinforced or altered (determinations that are just as important for coastal countries).



	Database	Fact base: population	Determine vulnerabilities	Protect species through corridors	Protect water sources	Train: workforce skills or better practices	Evidence of coordination	Evidence of stakeholder participation	Preserve & promote habitat corridors	Policies: water access & quality	Move individuals/develop structures (rising sea level)	Adaptation policies refer/linked to existing plans	Clear methods & timelines for monitoring	Implementation strategies: short- & long-term
Coastal Countries	0.4	1.05	1.75	0.6	1.7	2	1.65	1.85	0.8	0.4	0.5	1.75	0.85	0.95
Landlocked Countries	0.08	0.92	1.83	0.5	1.92	2	1.75	1.75	0.5	0.58	N/A	2	1.33	1

Figure 9: Comparison: Landlocked vs. Coastal Countries

Based on Region

Countries were also divided into subgroups based on their geographical location. The United Nations has divided the African continent into five distinct regions: Eastern, Middle, Northern, Southern, and Western (refer to Figure 3 for a list of the different African LDCs that have submitted NAPAs, categorized by region). A comparison was made to determine if there were differences between the average scores for each of the different regions. To obtain the average scores, countries were first grouped by region. Subsequently, the total of the country scores for each of the criteria was averaged to obtain an average score for the region. These averages are compared in the bar graph and table on page 110 (Figure 10).

Once again, these divisions and comparisons indicate that although some regions do score higher in certain categories compared to other regions, the differences between the regions are not large. (An important caveat to make is that both the Northern and Southern regions include only one country each, Sudan and Lesotho, respectively. Consequently, the scores in each of the categories for these countries determine the score for the whole Northern and Southern regions.)

Averages were left at two decimal points. If rounded up or down, these figures would have often produced the same results between regions. Differences seen are in the following categories: protection of species through habitat corridors; evidence of coordination between different levels of government, as well as with the community generally; evidence of stakeholder participation in the development of the NAPA's goals

and vision; preservation and promotion of habitat corridors; policies for water resources; and implementation strategies that are both short- and long-term. The Eastern African region scored lowest for two of the criteria: projects that protect threatened and endangered species through habitat corridors (score of 0.42) and for projects that preserve and promote habitat corridors (0.42). Results for the other regions under these two criteria are Middle Africa 0.8, Northern and Southern Africa 1, and Western Africa 0.54 for the protection of species through habitat corridors. For the second criterion, the preservation and promotion of habitat corridors, the scores were as follows: Middle Africa 0.8, Northern and Southern Africa 1, and Western Africa 0.85. The importance of the natural systems for each one of these regions is great, due to economies that rely heavily on climate-sensitive sectors (UNFCCC, 2011, p. 12); however, Eastern Africa, in particular is known for its tourism industry that is based on the animal species richness. Consequently, it is a concern that this region scored the lowest for both of the categories that would particularly protect the species and their habitats that are the basis of the economies of these nations.

The next category where a distinction is noted is for the criterion determining evidence of coordination between different levels of government, as well as with the community generally. Under this criterion, the Northern African region scored lowest (a score of 1). It is important to remind the readers that the Northern Africa region includes a sole country: Sudan. Nevertheless, this was a category that showed a peculiarity compared with the other regions. Eastern Africa scored 1.75, Middle Africa

scored 1.4, Southern Africa scored 2, and Western Africa scored 1.77. Sudan is a country that has experienced significant political unrest, which may explain the lower score for this criterion measuring the level of governmental coordination displayed. These results point to the need for additional support from the international community for countries such as these that are coming out of internal political turmoil (support that would encourage governmental action).

A further criterion where differences are observed is criterion number eight: evidence of stakeholder participation in the development of goals and vision for the NAPAs. The Southern Region (the sole country of Lesotho) scored the lowest with a 1 for this criterion, while the other four regions all scored close to 2 (Eastern Africa 1.83, Middle Africa 1.8, Northern Africa 2, and Western Africa 1.85). It is interesting to note that although the Northern Africa region scored the lowest for evidence of coordination between different levels of government, this region scored the highest for evidence of stakeholder participation in the development of goals and vision for the NAPAs. Sudan received a 2 for this criterion due to the level of detail included in the NAPA to explain stakeholder participation. The NAPA states how the country was divided into five regions and the community was then consulted for input. Reference is made to three levels of workshops in which the community was involved. The first level included actions to build awareness of the project. The second level of workshops obtained input from the community to help identify vulnerabilities faced by the country. The last level of workshops involved the community in defining the criteria to use for the prioritization

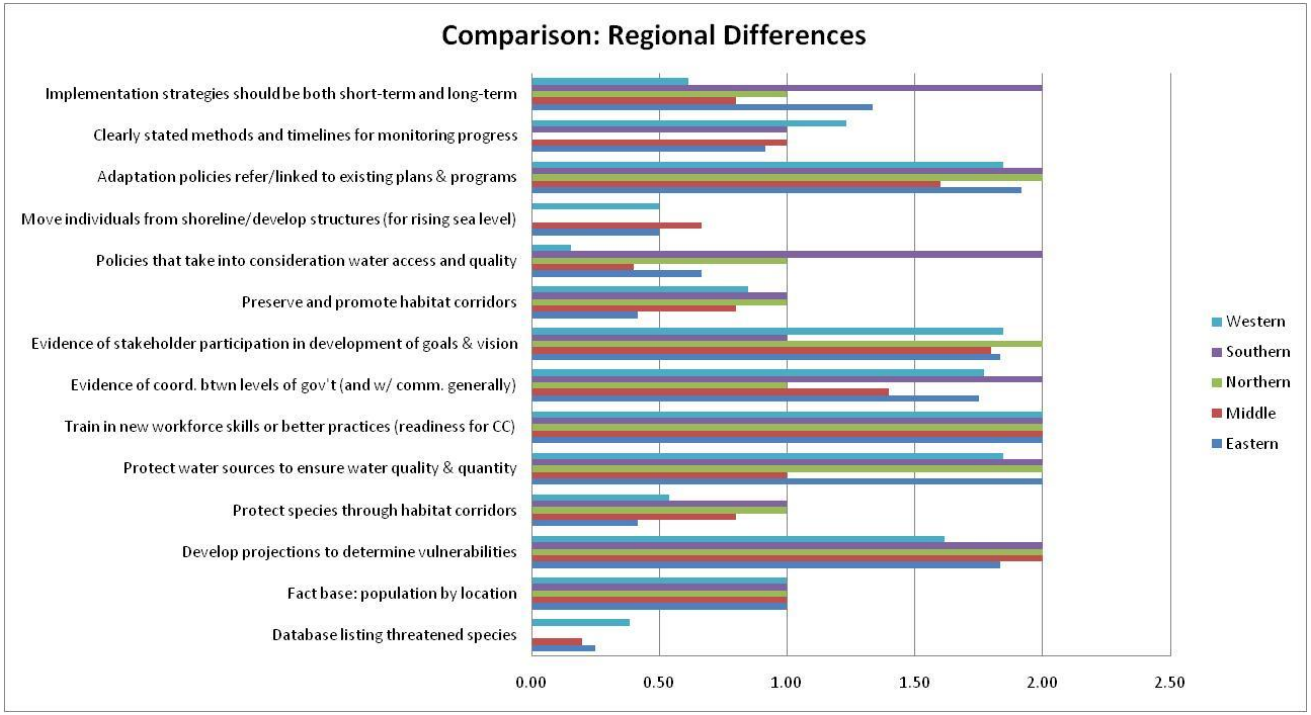
of the various projects. Few other NAPAs included this amount of detail on the types of activities undertaken to include the community. It is interesting that this same region/country scored the lowest in the amount of governmental coordination contained in the NAPA. In this sense, it is encouraging that the community can still be engaged and that participation was sought and obtained even without specific reference to the government (although the government may have been extensively involved but just not mentioned in the NAPA document).

Some of the greatest differences between the five regions are seen for the category of policies that take into consideration water access and quality. The highest score for this criterion was obtained by the Southern Region (Lesotho), which obtained a score of 2. Second is the Northern Region (Sudan), which received a score of 1. The Eastern Region received the next score of 0.67, followed by the Middle Region with a score of 0.4, and lastly the Western Region with a score of only 0.15. Lesotho is a landlocked country completely surrounded by the country of South Africa. South Africa has implemented extensive policy relating to water. The high score of the Southern Region (Lesotho) could therefore be related to the overall regional influence of South Africa. If it is the case that South Africa's policy and approach to managing water played a role in the Southern Region (Lesotho) scoring the highest, it could point to possible ripple effects throughout the continent. As countries and regions take actions to address the effects of climate change, and as other countries and regions see positive results, they may be more inclined to take similar steps. It will therefore be just as

important for these countries to keep detailed records of the impacts of their adaptation measures, and to share these records throughout the continent. This will encourage or warn other countries to take similar steps or to search for other alternative adaptation measures.

The last criterion where differences exist between regions is the presence of short- and long-term implementation strategies. The Southern Region (Lesotho) received the highest score for this criterion, a score of 2. All the other regions received scores near 1 (1.33 for the Eastern Region, 0.8 for the Middle Region, 1 for the Northern Region, and 0.62 for the Western Region). Lesotho's NAPA includes sections within each project description that delineate both short- and long-term expected outcomes. There are other NAPAs that include similar information, in similar detail, but the Southern Region scored highest because it is the average of just one nation (Lesotho, which scored a 2).

In comparing average scores obtained for each of the regions, several differences are observed between the five different geographical regions. Again, it is important to note that two of the regions (Northern and Southern) are both only comprised of one country each (Sudan and Lesotho, respectively). Possible implications of the differences observed have been outlined throughout this section.



	Database	Fact base: population	Determine vulnerabilities	Protect species through corridors	Protect water sources	Train: workforce skills or better practices	Evidence of coordination	Evidence of stakeholder participation	Preserve & promote habitat corridors	Policies: water access & quality	Move individuals/develop structures (rising sea level)	Adaptation policies refer/linked to existing plans	Clear methods & timelines for monitoring	Implementation strategies: short- & long-term
Eastern	0.25	1.00	1.83	0.42	2.00	2.00	1.75	1.83	0.42	0.67	0.50	1.92	0.92	1.33
Middle	0.20	1.00	2.00	0.80	1.00	2.00	1.40	1.80	0.80	0.40	0.67	1.60	1.00	0.80
Northern	0.00	1.00	2.00	1.00	2.00	2.00	1.00	2.00	1.00	1.00	0.00	2.00	0.00	1.00
Southern	0.00	1.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00	2.00	N/A	2.00	1.00	2.00
Western	0.38	1.00	1.62	0.54	1.85	2.00	1.77	1.85	0.85	0.15	0.50	1.85	1.23	0.62

Figure 10: Comparison: Regional Differences

Based on Per Capita Gross National Income

Data was gathered from The World Bank website to compare the NAPAs based on their per capita Gross National Income (GNI) for the year 2007. The year 2007 was selected as the comparative year because 16 out of the 32 countries submitted their NAPAs this year. The World Bank defines GNI as "the gross national income, converted to U.S. dollars" at official exchange rates (The World Bankb, 2012). (A full definition by The World Bank on the method to determine Gross National Income is included in Appendix B.) With this data, a comparison was made for the countries reflecting their total scores and their GNI. Figure 11 displays the results.

Coastal Countries	Maximum Score: 28	2007 GNI ($), per capita
Angola	12	2,660
Cape Verde	19	2,590
Djibouti	16	1,100
Sudan	16	930
Sao Tome and Principe	18	920
Senegal	16	900
Mauritania	13	790
Comoros, Union of the	22	640
Benin	18	630
Guinea-Bissau	15	450
Tanzania	15	410
Togo	18	370
Madagascar	18	340
Mozambique	17	340
Gambia, The	17	330
Guinea	16	330
Sierra Leone	17	280
Eritrea	17	260
Congo, Dem. Republic	16	150
Liberia	9	150

Landlocked Countries	Maximum Score: 26	2007 GNI ($), per capita
Lesotho	19	940
Zambia	16	750
Chad	15	500
Mali	17	470
Burkina Faso	19	420
Central African Republic	15	380
Uganda	18	380
Rwanda	13	350
Niger	15	290
Malawi	15	250
Ethiopia	14	230
Burundi	18	120

Source: The World Bank (a), 2012, GNI per capita, Atlas method

Figure 11: Country Scores by 2007 GNI, per capita

The results show that countries that have a larger GNI do not necessarily produce the NAPAs with the highest scores. In fact, for the coastal countries, Angola, which was the second lowest scoring NAPA under this subcategory, had the greatest GNI from the coastal countries in 2007. On the other hand, Liberia, which was the lowest scoring coastal country (9 points), tied with the Democratic Republic of Congo as far as the lowest GNI in 2007. The Union of the Comoros, which scored the highest (22 points) for coastal countries, placed close to the middle in terms of its GNI. Landlocked countries also displayed similar findings. Lesotho and Burkina Faso tied with the highest total scores at 19 points out of 26. Although Lesotho did have the largest GNI in 2007, Burkina Faso placed fifth out of the 12 total landlocked countries (in terms of GNI). The lowest scoring NAPA, Rwanda, placed 8th out of the 12 landlocked countries.

In one sense, these findings are encouraging. The reality that the GNI did not affect the scores for the countries reveals that the development of the NAPAs is not based on national budgets, but that they are, in fact, receiving assistance from the international community (in particular, from the UNFCCC). Likewise, it is hoped that the international community will assist the LDCs regardless of their national budgets and the ability for them to contribute towards the projects, and instead based on the quality of the proposed projects.

Based on the Percentage of Females in the Population

Additionally, comparisons were made to show differences in the NAPA total scores based on the percentage of females in the country populations. This data was also obtained from The World Bank website. Figure 12 reveals the results.

Coastal Countries	Maximum Score: 28	2007 Population, Female (% of total)
Mozambique	17	51.5
Sierra Leone	17	51.3
Benin	18	50.9
Eritrea	17	50.9
Cape Verde	19	50.8
Gambia, The	17	50.6
Angola	12	50.5
Sao Tome and Principe	18	50.5
Guinea-Bissau	15	50.5
Togo	18	50.5
Senegal	16	50.4
Congo, Dem. Republic	16	50.3
Madagascar	18	50.2
Tanzania	15	50.1
Djibouti	16	50
Liberia	9	49.9
Mauritania	13	49.8
Comoros, Union of the	22	49.7
Sudan	16	49.6
Guinea	16	49.5

Landlocked Countries	Maximum Score: 26	2007 Population, Female (% of total)
Lesotho	19	51.2
Burundi	18	51.1
Rwanda	13	51
Central African Republic	15	50.8
Burkina Faso	19	50.5
Chad	15	50.3
Ethiopia	14	50.2
Mali	17	50.1
Uganda	18	50.1
Malawi	15	50.1
Zambia	16	49.9
Niger	15	49.8

Source: The World Bank(b), 2012, Population, female (% of total)

Figure 12: Country Scores by Percentage of Females in the Population

The results displayed in the figure above show that higher percentages of females in the population do not necessarily translate into higher scoring NAPAs

(although this was the case for the highest scoring landlocked country). Mozambique has the highest percentage of females for coastal countries (51.5%) but scored 17 total points, out of 28. On the other hand, the highest scoring coastal country, the Union of the Comoros (22 points), ranked close to the bottom (third from last) in terms of the percentage of females in the population. The lowest scoring coastal country, Liberia (9 points), ranked 16th out of the 20 coastal countries with a total 49.9% of females in the population. In terms of landlocked countries, both Lesotho and Burkina Faso scored the highest at 19 points (out of 26). Lesotho did have the highest percentage of females in its population (51.2%). However, Burkina Faso ranked fifth (out of 12) in the percentage of females in its population (50.5%). The lowest scoring landlocked country, Rwanda (scoring 13 points out of 26) had the third highest percentage of females in its population (51%).

A participatory approach is important to the development of adaptation plans in particular (Nyong, Adesina, & Osman-Elasha, 2007, p. 795) and to plans generally (Brody, 2003a, p. 193; Laurian, 2004, p. 53). The literature also states that women's input is of great value to the development of adaptation plans due to their "vital local and traditional knowledge" (UNFCCC, 2002, p. 3). On the other hand, the literature states that many social structures still exclude women and young children from community input and decision-making opportunities (Kalame, Kudejira, & Nkem, 2010, p. 541). With that one caveat, if participation should reflect the composition of the population, then the populations that have a greater percentage of women would

include greater women participation and may show the inclusion of "vital" knowledge (UNFCCC, 2002, p. 3). However, the results displayed in the figure above show that this is not necessarily the case in the NAPAs. This, however, is a broad generalization and points to one of the limitations of this assessment. The assessment was not able to verify or obtain more detail concerning the full participatory process leading to the creation of the NAPAs. The assessment was only able to evaluate the plans based on what was included in the reports. Some were more detailed than others concerning the participation that took place to develop the NAPAs. Furthermore, it was not possible to verify that the information included in the NAPAs concerning the level of participation is true.

Since one of the guiding principles for the creation of the NAPAs is that they consider gender equality (UNFCCCb, 2002, p. 9), one recommendation for further research would be to determine the actual level of female participation in the development process, as well as determine how many of the projects specifically address women.

Based on Dates of Submission to the UNFCCC

The last comparison category is a comparison based on the year in which the NAPAs were submitted to the UNFCCC. Before comparing based on submission years, the countries were first divided into two subgroups: landlocked and coastal countries. Subsequently, the total scores for the countries within each subgroup were put side by

side. Figures 13 (coastal countries) and 14 (landlocked countries) show the results of these comparisons.

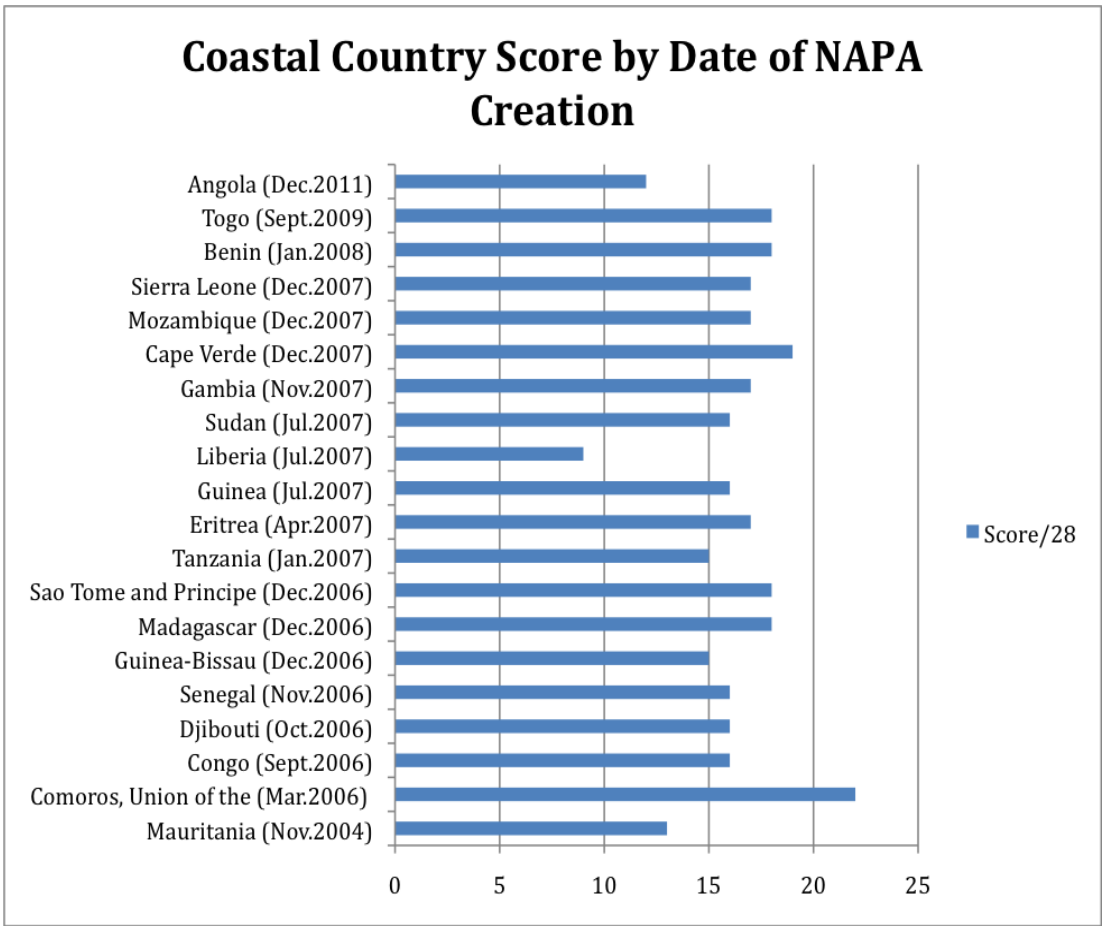


Figure 13: Coastal Country Score by Date of NAPA Submission

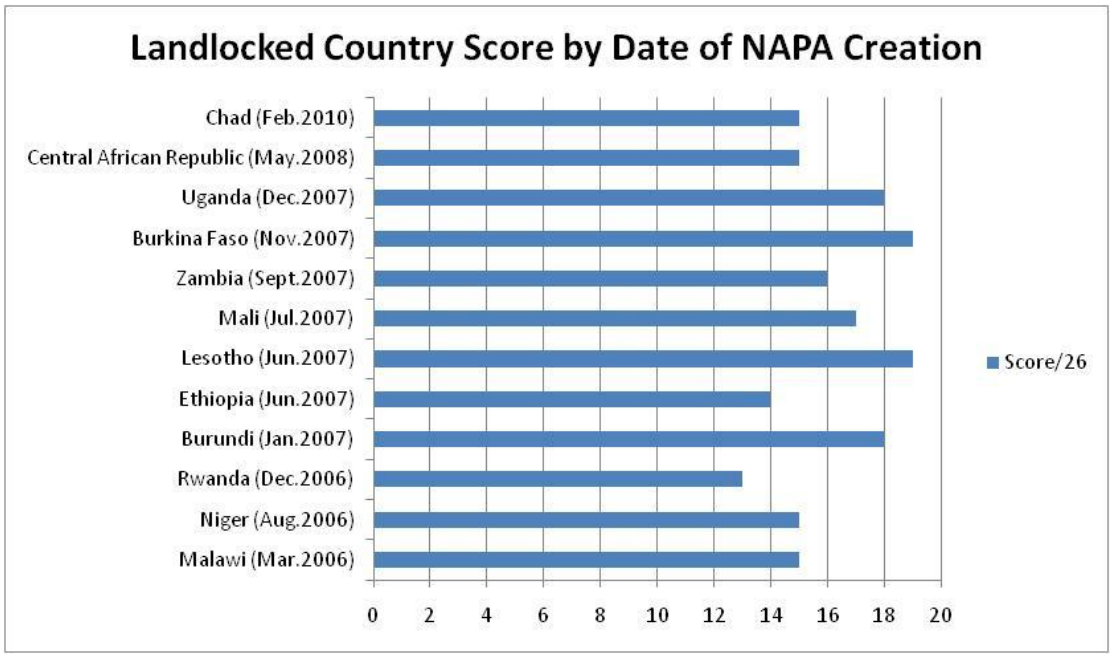


Figure 14: Landlocked Country Score by Date of NAPA Submission

The results in Figures 13 and 14 reveal that as time progresses, and the nations submit their NAPAs to the UNFCCC, there is, however, no progression to higher total scores. Rather than observing a progression in scores, both the coastal countries and the landlocked countries display very similar total scores between their respective first and last NAPAs. For coastal countries Mauritania is the first nation to have submitted its NAPA, which was done in November of 2004. Angola, on the other end, is the last coastal country to have submitted its NAPA (December of 2011). The difference is of seven years, yet the total scores are very similar. In fact, Mauritania's score is one point higher than Angola's, even though Angola is the last nation to have submitted a NAPA to the UNFCCC. Mauritania received a score of 13 points out of 28, and Angola received 12 points out of 28. For landlocked countries the total scores between the two nations that submitted first and last are exactly the same. Malawi submitted its NAPA in March

of 2006 and Chad submitted in February of 2010. Yet, both Malawi and Chad obtained the same score of 15 points out of 26.

In comparing all of the submitted NAPAs, one can observe that there is a large group of the NAPAs that scored in between 14 and 19 points (this is true under both subcategories of coastal and landlocked countries). The most numerous differences from this range are found within the coastal countries. The Union of the Comoros scored the highest of all the NAPAs with 22 points out of 28. It is interesting to note that this NAPA was second in submission of the coastal countries (after Mauritania, which obtained a score of 13 and before the Democratic Republic of Congo, which obtained a score of 16). Following its submission, the NAPAs fall back into the range stated above (14-19), with the exception of Liberia. Liberia submitted its NAPA in July of 2007 (12^{th} in order of submission out of the 20 coastal countries) and scored the lowest of all of the coastal countries (9 points out of 28). The third exception to the range of 14-19 points observed in the coastal nations is Angola, which scored 12 points and is the last nation to submit a NAPA (December 2011). Within the landlocked countries, the only one that scored outside of the 14-19 point range is Rwanda, with a total score of 13 points (out of a maximum of 26 and not out of 28). All other landlocked countries score within the 14-19 point range.

These scores reveal that there is no progression in the content found within the NAPAs. As time has passed, the countries are not changing their approaches or the content generally that is located within the NAPAs. Furthermore, the year in which the

highest scoring coastal country NAPA was submitted, 2006, is also the year when the lowest scoring landlocked country NAPA was submitted. These findings pose several questions and concerns.

First, the NAPAs were established in 2001, partly to prepare the LDCs to respond to the effects of climate change while protecting the poor and most vulnerable, as well as to enable the LDCs to "quickly and effectively communicate their . . . adaptation needs" (UNFCCCa, 2002). Because of climate change, there is no longer a "relatively stable" variability from year to year in the climate system (Hansen & Hoffman, 2011, p. 27). Furthermore, Blanco and Alberti (2009) state that climate change adaptation strategies are still being formed (p. 163). The reality that climate change is creating an uncertain and variable future, and that climate change adaptation strategies are continually being developed and formed should both be evidenced in NAPAs that show evolution in their content. As time passes and as more information is obtained, the NAPAs would hopefully reflect the additional data that is contained within. However, the results above show that this is not the case.

These results pose a couple of concerns. Are the UN Guidelines for the development of NAPAs too strict that they do not permit the flexibility needed to adequately respond to each individual country's climate change vulnerabilities? This would not seem logical since two of the guiding principles of the NAPAs are those of forming the document with a country-driven approach and allowing for flexibility in procedures based on individual country circumstances (UNFCCCb, 2002, p. 9).

Nevertheless, there does not seem to be an improvement in the content or approaches that are being taken and stated in the NAPAs to reflect that the documents are being developed with country foci that incorporate new scientific advances. In fact, the very last NAPA submitted to date obtained one of the lowest scores.

Even though the NAPAs are to "quickly" communicate their adaptation needs, they are also called to do so "effectively" (UNFCCCa, 2002). Unfortunately a lack of progression in scores seems to point to the fact that these plans may be generated quickly but may not be reflecting scientific progress in the area of climate change adaptation. It is possible that the nations need to be sharing more information among each other to reveal successful strategies as well as those that are not particularly beneficial. And that the nations use this feedback and information to serve as a starting point for further adaptation plan development. Perhaps the generally lower scores and vague descriptions under the monitoring sections of the NAPAs are posing a barrier to sharing information that reveals effectiveness and lack thereof. Care needs to be made that the NAPAs are not being developed simply as a formal document, but that they are being developed as a document that will address economic, social and environmental needs adequately.

The various subcategories and comparisons explained in the previous sections are helpful to identify additional similarities and differences between the NAPAs. These similarities and differences likewise reveal other implications concerning the NAPAs and their development. These are lessons that would be beneficial for the future

development of adaptation plans, not only for LDCs but also for other developing and developed nations. As shown throughout the results, some of these lessons also correspond specifically to the NAPA guidelines for developing these national adaptation programmes for LDCs. The findings from this research point to a need to balance flexibility within the guidelines, allowing countries to develop plans that correspond with their specific local needs, and additional requirements that will ensure that countries incorporate the various methods that have been identified in the literature as best practices to address climate change.

CONCLUSIONS

International adaptation planning strategies continue to evolve and develop in conjunction with uncertain effects of climate change. The literature points to the array of possible negative effects on communities around the world due to climate change (ranging from increased rates of floods, drought, cyclones, accelerated sea level, climate related illnesses, and others). Particularly vulnerable are the communities of Least Developed Countries. These countries rely on natural systems for the basis of their economies. Since the natural systems will be particularly negatively affected by climate change, the economies and livelihoods of LDCs face grave danger and consequences. In light of this, the international community established NAPAs as a way for LDCs to identify their particular vulnerabilities and communicate them to the world, along with possible projects that would address these vulnerabilities. It is hoped that the NAPAs will serve to garner financial support from the international community to carry out these projects.

Since the establishment of the NAPAs in 2001, 47 out of a total 48 LDCs have submitted NAPAs to the United Nations. Thirty-two of these NAPAs are from African countries. NAPAs are meant to address the economic, social and environmental implications of the LDCs. Although the United Nations has established guiding principles to help the nations develop their NAPAs, an assessment of all 32 African NAPAs has not been conducted in the past to see how they are meeting the needs of the poor and

maintaining of biodiversity. This research fills this gap, and from this research, several conclusions can be made.

One of the first steps necessary to establish effective adaptation plans is the identification of a fact base. A solid fact base is needed both in order to determine the vulnerabilities that could be faced by the poor and also to determine the vulnerabilities that could be faced by the natural habitats (which could result in degradation of biodiversity). While the NAPAs were generally strong in the fact base explaining the general vulnerabilities faced by various sectors of the countries, the NAPAs fail to specifically list endangered species. In order to maintain biodiversity (an essential component to the correct functioning of various natural processes), the countries must first identify the species that particularly need protection. It is with a strong factual basis that effective policy can be determined.

Once this fact base has been determined, the countries will be better able to develop preservation projects that protect their ecosystems' biodiversity. Currently, the assessment found that some countries propose projects to protect habitats. However, literature points specifically to the effectiveness of connecting and maintaining habitat corridors for biodiversity. Consequently, NAPA guidelines should be revised to propose that projects addressing ecosystem conservation specifically promote corridors.

There is another reason why maintaining the biodiversity within these countries is so important. The economies of the LDCs are based on natural systems that are likely to suffer due to climate change and due to loss of biodiversity. Subsequently, in

addition to the projects that maintain biodiversity for natural processes, projects should jointly prepare communities with new skills or methods that preserve their national economies. This assessment found that there are numerous projects preparing the communities with new methods and skills. The extensive quantity and detail of these projects show that the governments of these nations recognize that their populations need to be prepared and trained to practice new skills to ensure that the nations' economies do not collapse. NAPAs should continue to include such a detailed and abundant group of projects and descriptions on different skills that could be learned by these communities.

Another important issue for LDCs is water. Water quality and quantity are matters of growing concern not only for LDCs but also for communities worldwide. However, for LDCs, the consequences of poor water quality or diminished water quantities can be dire, particularly to the impoverished. These consequences include greater rates of water-borne illnesses and decreased crop yields. While the NAPAs include numerous projects that address water quantity and quality, few NAPAs mention or propose the creation of policy pertaining to water management. Projects will take immediate action for the preservation of water quality and quantity; however, in order to ensure adequate quality and quantity in the long-term future, these countries need to incorporate policy as well.

Since the LDCs have limited national budgets, it benefits them to align their proposed adaptation measures with other national and international plans that have

already been adopted and may already be in effect. Such alignment would reduce the duplication of efforts and would permit countries to focus their financial resources more effectively. However, in order to do this, the proposed projects within the NAPAs need to more specifically show how they would be related to already established policies and plans. Currently, the NAPAs generally make reference to current policies, but few of the NAPAs state how each project is specifically linked.

The scores from this assessment show that there has not been much improvement in the content or adaptation methods included in the NAPAs since the establishment of the program. The assessment also shows that the NAPAs are generally weak in describing the monitoring actions that will take place to ensure that the NAPA projects are working effectively. The lack of clear monitoring processes could be part of the reason why the NAPAs have not seen much evolution. With clear monitoring processes, it is possible that programs or processes that have not been effective would be eliminated, while programs or processes that have shown positive results would be further encouraged in other NAPAs. One way to improve upon this is to require that NAPAs include more detailed information on the monitoring processes and indicators that will be measured to determine if the proposed steps are effectively addressing climate change and protecting the needs of the poor and maintaining biodiversity.

Another conclusion from this thesis is the identified importance for regional and international support as well as regional and international information sharing. A couple of the nations' NAPAs mention recent civil wars. These countries tend to display

lower scores. It is important that these countries receive additional international and regional support to ensure that they are more quickly restored to a position where they can respond effectively to climate change consequences. International and regional support could consist of both financial and technical support. Furthermore, regional support should not be limited to these nations, but it would benefit the whole continent (as well as other continents and regions that are undergoing adaptation planning for climate change) to conduct regional meetings or regional information-sharing opportunities. These opportunities would permit countries to share successes and failures of their adaptation plans. This type of sharing would only strengthen future programs and actions.

Although there are several recommendations on how the NAPA guidelines could be modified to better protect the needs of the impoverished and for the maintaining of biodiversity, there are several limitations to this thesis. First, this assessment was only able to revise the actual NAPA documents and not determine or fully verify the actual process behind the formulation of the NAPAs. Scores were obtained concerning governmental coordination and stakeholder participation based on the information stated in the NAPAs. However, the scope of the research did not permit verification of the full planning process. It was also impossible to determine what type of external consultation, if any, was part of the NAPA development process. Establishing whether there was external consultation and to what degree consultation was obtained could produce additional findings related to the quality of the NAPAs and the type of

consultation given. Further research would benefit the future developments of NAPAs or of other adaptation plans. The further research should try to ascertain the participants involved in the development process as well as the precise steps taken to formulate the plans (both in relation to internal governmental and stakeholder involvement, as well as external involvement).

A further limitation with this research involves not having determined how the NAPAs address the concerns of women or the actual level of participation by women. The NAPAs guidelines state that gender equality should be considered in the development of the programmes. And, women have been identified as also being some of the most vulnerable within the populations of the LDCs. However, the scope of this thesis did not permit measuring the number of projects that specifically addressed women and their concerns. Furthermore, though literature points to the importance of women's input in the development of plans, this assessment did not determine the extent of participation by women in the NAPA planning process within these countries. This is one area that would benefit from added research.

A third limitation also exists. A sole researcher conducted the assessment. This poses the possibility of bias or subjectivity in the ratings of the plans. One could therefore conclude that the research results would be strengthened with additional verification from another or other researchers going through the NAPAs and evaluating them using the same established criteria.

A fourth limitation in this research is the choice to weight criteria equally. This choice created an inherent bias based on the quantity of measures in each category. The findings from this research would be further strengthened by first determining which criteria would have a greater impact both for protecting the livelihoods of the poor and also for maintaining biodiversity. These criteria would be given a higher point value.

In summary, the guidelines established by the UN for the preparation of NAPAs provide necessary direction to the LDCs. However, as shown from this research, and as stated above, there are several ways in which these guidelines could be strengthened. The directives within the guidelines render some flexibility to the individual nations as they establish their national documents by stating that these programmes of action should be developed with a "country-driven approach" (UNFCCCb, 2002, p. 9). Are the guidelines however, still too flexible, allowing plan submission and acceptance from the UN while failing to adequately address the concerns listed in the guidelines? Or, does the similarity between the NAPAs (evidenced from total scores that are within a small range) mean that the guidelines are too strict and prevent countries from thinking outside the box for additional methods of addressing climate change, or from developing plans that adequately address their concerns? These questions lead to the conclusion that the NAPA guidelines need to be reviewed. They need to be reviewed to determine which steps require more flexibility and which steps require more specific guidance (and possibly more specific mandates).

Some literature-based alterations include requiring that a certain percentage of the proposed projects specifically deal with the natural systems, while leaving room for other projects to exclusively address other human population needs. The guidelines could also require that each proposed project list the national or international policy with which it is linked. Since certain actions are already being carried out in other policies, linking NAPA projects to these existing policies could result in projects that are less expensive. Specifically, linking projects to existing environmental policies would force the projects to have an environmental focus.

The UN guidelines should also be made more specific to prepare coastal zones. Coastal zones have been identified as being particularly vulnerable to the effects of climate change, yet the results of this assessment show that there is little inclusion of actions taken to protect communities located along the coast. A few countries propose construction of infrastructure to protect the coastline. Two nations make reference to relocating the communities. The literature, however, shows that many more are going to have to move from the coast due to effects of climate change. The governments of these African nations need to take greater steps toward protecting and planning for the future of their coastal populations.

The recommendations listed above are specific to the UN guidelines for NAPAs. Nevertheless, in addition to the implications for the UN guidelines, the findings from this thesis also have significance for adaptation planning generally and the Least Developed Countries specifically. The literature shows that adaptation planning is continually

evolving; this is a reflection of the advances being made in the field of climate change scientific knowledge. However, the assessment of these specific NAPAs shows that there has not been much change throughout the years. Similar processes and responses are recommended, possibly overlooking some of the more recent findings concerning climate change and concerning best practices to address the impacts of climate change. It is important that the adaptation planning literature continue to be built, based on practices being carried out and their subsequent results. Particularly, it is essential that LDCs be able to access information on the best practices of adaptation planning generally. Information sharing will be critical to the success of their plans. Without information, LDCs risk overlooking past failures or successes, and will inadequately protect the most vulnerable, the poor and the natural systems necessary for biodiversity preservation, both of which are some of the most voiceless in our world.

APPENDICES

Appendix A: Criteria Addressing the Environment, Poor, and Both Categories

Coastal Countries	1: Database listing threatened species	4: Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	9: Preserve & Promote habitat corridors	2: Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	6: Train communities in new workforce skills or better practices that incorporate readiness for climate change	8: Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	11:Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	3: Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	5: Protect water sources to ensure water quality and quantity	7: Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	10: Policies that take into consideration water access and quality, while allowing for flexibility	12: Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	13: Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	14: Implementation strategies and outcomes should be both short-term and long-term	Maximum Score: 28
Angola	1	1	0	1	2	1	0	2	0	1	0	2	0	1	12
Benin	0	2	1	1	2	2	0	2	2	2	0	2	2	0	18
Cape Verde	0	1	1	2	2	2	1	2	2	1	0	2	1	2	19
Comoros, Union of the	2	1	1	2	2	2	1	2	2	2	0	2	1	2	22
Congo	0	2	2	1	2	2	0	2	0	2	0	1	1	1	16
Djibouti	0	0	1	1	2	2	0	2	2	2	0	2	1	1	16
Eritrea	0	1	1	1	2	2	0	1	2	2	0	2	1	2	17
Gambia	1	0	1	0	2	1	1	2	2	2	2	1	1	1	17
Guinea	0	1	2	0	2	2	0	2	2	2	0	2	1	0	16
Guinea-Bissau	2	0	0	1	2	2	0	1	2	2	0	2	1	0	15
Liberia	0	0	0	0	2	2	1	0	0	1	0	2	1	0	9
Madagascar	0	0	1	1	2	2	0	2	2	2	2	2	1	1	18
Mauritania	0	1	0	2	2	1	0	1	2	1	0	2	1	0	13
Mozambique	0	1	0	1	2	2	2	2	2	1	1	1	0	2	17
Sao Tome and Principe	0	0	1	1	2	2	2	2	2	1	2	1	1	1	18
Senegal	0	0	1	1	2	2	1	2	2	2	0	2	1	0	16
Sierra Leone	0	0	1	1	2	2	1	2	2	2	0	2	0	2	17
Sudan	0	1	1	1	2	2	0	2	2	1	1	2	0	1	16
Tanzania	1	0	0	1	2	2	0	2	2	2	0	2	0	1	15
Togo	1	0	1	2	2	2	0	2	2	2	0	1	2	1	18
Averages	**0.40**	**0.60**	**0.80**	**1.05**	**2.00**	**1.85**	**0.50**	**1.75**	**1.70**	**1.65**	**0.40**	**1.75**	**0.85**	**0.95**	**16.25**

Criteria addressing the environment

Criteria addressing the poor

Criteria addressing both the environment and the poor

Landlocked Countries	1: Database listing threatened species	4: Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	9: Preserve & Promote habitat corridors	2: Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	6: Train communities in new workforce skills or better practices that incorporate readiness for climate change	8: Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	3: Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	5: Protect water sources to ensure water quality and quantity	7: Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	10: Policies that take into consideration water access and quality, while allowing for flexibility	12: Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	13: Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	14: Implementation strategies should be both short-term and long-term	Maximum Score: 26
Burkina Faso	0	2	1	1	2	2	2	2	2	0	2	1	2	19
Burundi	0	1	1	1	2	1	2	2	2	0	2	2	2	18
Central African Republic	0	1	1	1	2	2	2	1	1	0	2	1	1	15
Chad	0	0	0	1	2	2	2	2	2	0	2	2	0	15
Ethiopia	0	0	0	1	2	1	2	2	1	1	2	1	1	14
Lesotho	0	1	1	1	2	1	2	2	2	2	2	1	2	19
Malawi	0	0	0	0	2	2	1	2	2	2	2	1	1	15
Mali	0	0	2	1	2	2	2	2	2	0	2	2	0	17
Niger	1	0	0	1	2	2	1	2	2	0	2	2	0	15
Rwanda	0	0	0	1	2	2	2	2	1	0	2	1	0	13
Uganda	0	0	0	1	2	2	2	2	2	2	2	1	2	18
Zambia	0	1	0	1	2	2	2	2	2	0	2	1	1	16
Averages	**0.08**	**0.50**	**0.50**	**0.92**	**2.00**	**1.75**	**1.83**	**1.92**	**1.75**	**0.58**	**2.00**	**1.33**	**1.00**	**16.17**

Criteria addressing the environment

Criteria addressing the poor

Criteria addressing both the environment and the poor

Appendix B: Definitions

Gross National Income (GNI), per capita: The World Bank defines GNI as

> "the gross national income, converted to U.S. dollars using The World Bank Atlas method, divided by the midyear population. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. GNI, calculated in national currency, is usually converted to U.S. dollars at official exchange rates for comparisons across economies, although an alternative rate is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate actually applied in international transactions. To smooth fluctuations in prices and exchange rates, a special Atlas method of conversion is used by The World Bank. This applies a conversion factor that averages the exchange rate for a given year and the two preceding years, adjusted for differences in rates of inflation between the country, and through 2000, the G-5 countries (France, Germany, Japan, the United Kingdom, and the United States). From 2001, these countries include the Euro area, Japan, the United Kingdom, and the United States" (The World Banka, 2012).

Population, female (% of total): The percentage of females in the population, based on the "de facto definition of population, which counts all residents regardless of legal

status or citizenship – except for refugees not permanently settled in the country of asylum" (The World Bankb, 2012).

Appendix C: Country Assessment Results

Dec-11	Angola	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	Y	44	No actual database, but the plan does list nine different endangered species - however, this is not addressed in the top 15 priorities later identified in the report	1
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	27, 44	Brief statement that the majority of the pop now resides in urban areas, p. 44 states that 50% of pop lives along the coast	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	15, 16-18, 19	p. 19 states the five geographical regions in which the country was divided in order to have a better understanding of the different vulnerabilities. Reference is made to different regions of the country, but no map is present.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	21, 22	Some of the projects talk about studying the vulnerability of the fish sector, but not necessarily through habitat corridors	1
	Protect water sources to ensure water quality and quantity	N			0
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	85	Promotion of sustainable land management techniques. Promote cultivation techniques for increased water retention and erosion prevention. Promote changes in agricultural practices for the conservation of soil humidity and nutrients.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	19	State how authorities in each of the identified communities were consulted in the preparation of the plan. Lacks details on what was done	1
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	19, 67	State that local communities were consulted in the definition of future impacts, states that consultants went into the different provinces and conducted surveys to gather information	1
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	77-79	Lists the different plans and programs, as well as different agencies with whom they could partner	2

Dec-11	Angola	Present	Page(s)	Notes	Weight
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	N			0
	Implementation strategies should be both short-term and long-term	Y	84-88	Shown in the five projects proposed	1
					12

Jan-08	Benin	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N		p. 23 - states that the coastal ecosystems are rich in species - fish and fauna, particularly. It also states that climate change could have negative effects on the livelihood of these species. An actual database of the most threatened, however, is not included.	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	13	Explanation of the population states that a great concentration of the population lives in the southern part of the nation (closer to the coastline). A chart is included that shows the percentage of the population by province (this	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	19-46, 59	State vulnerabilities faced by the country, divided by sector: water resources, energy, coastal zones, health, and ag & forestry. Includes specific projections & current trends; lists specific national zones that are affected differently & specifically by climate change. Report includes additional information on six sample regions. For each of these regions, a map is included that shows specific conditions of the region (possible areas to be affected by floods, identify regions where a national park exists, etc.). Explanation includes the # of men and women in the region, and the % of the pop living in rural areas. Table on p.37 where the six regions are listed, as well as the identifed climate risks, current livelihood activities, productive activities that exist in the region, and base resources in each region. Additional tables: list several climate hazards and the level of damage/consequence that the hazards would have on specific systems in each region. Proj 1: seeks to strengthen a system of climate projections to ensure that agricultural communities are better able to respond to climate change effects.	2

Jan-08	Benin	Present	Page(s)	Notes	Weight
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	71	p. 34 specifically states that Commune d'Adjohoun has one species that is particularly endangered (the red-bellied monkey). Project 5: Coastal zone talks about the importance of mangroves to many species but that mangroves are in a state of great degradation. This project will seek, in part, to restore mangroves.	2
	Protect water sources to ensure water quality and quantity	Y	59	Project 3: will mobilize surface water to preserve it, allowing for water recharge, and the subsequent provision of water during other times of drought.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	59, 61, 66	Project 1: One of the objectives is to promote appropriate systems of ag production so that communities are better able to respond to climate change. Project 2: seeks to help households change their methods of producing energy in order to also preserve forestry resources. States that one of the outcomes will be shortened cooking time for women, granting them more time for other activities. Project 3: will also educate the population on rational use of water and will encourage better practices. Project 4: will educate the community to encourage the use of mosquito nets to protect the population against malaria. Project 5: partly seeks to promote a better technology and method to extract salt from water by using solar and wind power; education efforts will also be made for better use of coastal resources in general (preservation of mangroves)	2

Jan-08	Benin	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	35-36, 75	Explanation of how the NAPA was developed includes a list of participants that includes both local elected leaders and representatives from the national level (as well as other community representatives). Coordination by locally elected officials is explained as taking place, also, once the projects are implemented (to ensure their efficiency).	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	35, 49, 50, 73, 78	NAPA explains who was involved: local populations (including the private sector, non governmental orgs., civil society orgs, community organizations, religious groups, governmental representatives from each of the sectors, local elected leaders, and a delegation from the national ministry of the environment). A table is included that lists current and past forms of adaptation - some of these are actions that were identified by the population. P.50 includes a table listing the urgent needs for adaptation, as listed by the populations. These needs were then compared and assessed by experts from the different sectors to come up with a list of actions. The process of creating the NAPA, as described, includes consultations with affected parties that included group meetings, workshops to exchange ideas, individual meetings, public consultations. It's stated that during these consultations, indigenous methods were collected (methods currently used for adaptation). Annex 1: explains the process used to gather community input.	2

Jan-08	Benin	Present	Page(s)	Notes	Weight
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	59	Project 5: part of its compoments includes the restauration of mangroves.	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		p. 21 states that waves have already destroyed several homes in the past, several villages have been completely destroyed, and thousands of people in the coastal zones have already had to clear out.	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	24, 46-47, 74	Reference is made to a national Declaration on the Policy concerning Population (1996). This policy has several strategies, some of which are related to climate change. Other policies mentioned include the National Programme for the Environment, and the Strategy to Reduce Poverty. A list of specific laws and the dates they were passed is included (laws that are related to the NAPA). Further explanation is given on p. 74 that states the various policies that were considered when creating the NAPA (statement is made that priority was given to actions that went along with these policies).	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	62	Projects each have a table under monitoring/evaluation. These tables include indicators to be measured (both indicators of execution - what has been accomplished, and indicators of impact - what does this mean). A column also includes the mechanism by which these indicators will be measured. For some of the projects, the list of these mechanisms include a sort of timeline.	2
	Implementation strategies should be both short-term and long-term	N		Projects do not include a separation between the strategies that will be conducted in the short- or long-term, nor any reference to short- or long-term results	0
					18

Nov-07	Burkina Faso	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N	46	Reference is made on p.2 to the numerous species (including numbers of species of land and water fauna) but these do not include endangered species precisely. Project 5: part of the activities listed is that of creating an inventory of endangered species (in forests)	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	1	General statement is made with the total population and the percentage that are rural (82.7%).	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	7-12, 14-16	Various models are referred to as having been used to determine projections for various sectors. The current state of the nation is listed (dividing the country into three zones and explaining their current status of temperature change and precipitation). It also shows trends of increasing temperatures. Additional detail is given to show the projected effects of climate change specific to various sectors of the community.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	40, 61	p. 6 states that from 1980 to 2000 forest cover went from 15,42 millions of hectares to 11,29 million. This and other land degradation has resulted in migration of species that seek better habitats. Currently, bustards (bird), giraffes and ostriches are now rare in Burkina Faso. Further reference is made to the threat faced by certain species (not named in this section) that will suffer due to forests being degraded p. 16. P.40 states that the Oursi Lake is one rich in biodiversity but that is degraded due to little rain, strong winds, which puts both humans and non-human species at risk. Project 3 will address these risks by protecting the areas against erosion. Project 10: addresses vulnerable ecosystems that have been and are being degraded, resulting in endangered species. This project seeks to protect these ecosystems and educate the community about the need to protect these systems - with the goal of restoring habitats for various species.	2

Nov-07	Burkina Faso	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	37, 50, 52, 64	Project 2: will, among other things, construct water reservoirs to ensure access to water. Project 6 seeks to protect water bodies through actions that will stop the banks' erosion, resulting in better protection of the ecosystems and species within the ecosystems, as well as better protection of the water source. Project 7: will in part seek to increase the amount of water available for the irrigation of crops, as well as seek to reduce pollution of surface and underground water. Project 11: will place protective perimeters around various water sources in order to protect the quality and thus protect the health of people.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	34, 37, 43, 46, 52, 55, 58, 67	the risks of climate change on food sources, as well as training them on the operation of cereal banks to provide food during times of drought. Proj 2: seeks to ensure production of cereal foods through the introduction of additional irrigation methods. Proj 4: encourages & promotes an already established program that will help livestock owners be better prepared to withstand dry seasons. Proj 5: will encourage the adoption by the population of using resources that are non-woody for medicinal purposes (to preserve the forests). Proj 7: will train the communities on different cultivation methods that will use less water and use water more efficiently. Proj 8: will train producers about the negative effects of climate change, so that they are better prepared to respond to them. This project will also seek to identify pastoral regions that need to be preserved. Proj 9: will seek to improve agricultural capacities by encouraging new techniques. Proj 12: seeks to promote the use of equipment & techniques that are more energy efficient. (Includes specific reference to encouraging women to use these different	2

Nov-07	Burkina Faso	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	7, 27	The elaboration of the NAPA is described as having included input from various administrative and political representatives and technicians, as well as NGOs, and associations of producers. Section beginning on p.27 states the participatory process carried out for the elaboration of the NAPA. It includes a section describing the government's roles: creation of a committee at a ministerial level, counsel from ministers on the different actions to take place to address climate change, supervision to be carried out by the Permanent National Secretariat of the Environment, the gathering of various experts to form an advisory committee.	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	6,7, 13, 18, 27, 29	In each of five zones selected for study, surveys were conducted within a radius of 50 km. 56 villages were subject of surveys. These surveys are said to have confirmed the identified vulnerable groups, gather information on their current methods of adaptation, extract erroneous perceptions of climate change, and identify the actions that they deem most important. P.13 includes a table that identifies the manifestations of climate change, as observed by communities around the nation. P.18 states that the surveys took into account the various groups and included surveys of youth, men, women, older people, shepherds, etc. Workshops were specifically done for different groups: women, older people, youth, and ag and herdspeople groups. These were done to ensure that various voices and inputs were received. It's stated that it is to be noted that there were women that formed part of the group of experts, which was done in order to ensure that the needs of women were represented.	2

Nov-07	Burkina Faso	Present	Page(s)	Notes	Weight
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y		See criterion above related to protection of endangered species.	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A - landlocked country	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	iv, 16-18, 28	In the summary section of the NAPA, a statement is made about integrating the objectives of other policies and strategies (referring specifically to the Strategy that Fights Against Poverty). List of various strategies and policies are listed on p.16 (these include strategies that fight against poverty, strategy to develop the rural sections, plan against desertification, plan in relation to the environment, plan of the environment for the sustainable development, the national policy on forestry, national policy on water, among others). P. 18 includes a table that lists three specific policies, their objetives, and their relationship to the NAPA. P.28 states how the government has engaged the protection of the environment (through both the adoption of the National Council for the Environment and Sustainable Development, as well as the existence of the National Council for the Urgent Rescue and Rehabilitation).	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	N	34	Projects include a general statement that they will be monitored by a pilot committee, and some state that they will conduct evaluations mid-way through the project, as well as at the end of the project. There are no specific things that will be measured to indicate success.	1
	Implementation strategies should be both short-term and long-term	Y	34	Projects include short- and long-term results/effects of these actions, which go along with implementation strategies.	2
					19

Jan-07	Burundi	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N		Refer to inventory reports that list the number of different types of fauna species (p.5)	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	54	Refers to pop being 96% rural	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	vii, viii, 10	Identify in the exec summary the precipitation ranges for the different zones; give information on how various parts of the country have been affected by climate change; give projections. Go into more details starting p. 10.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	x	The exec summary states the selection criteria of priority activities: several of these criteria would protect habitat corridors.	1
	Protect water sources to ensure water quality and quantity	Y	30	Option selected that establishes and protects buffer zones around lakes	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	x, 30, 43, 52, 58	The exec summary states the selection criteria of priority activities: some of these state pupularizing different ag practices; one of the options selected is that of training on methods of adaptation to climate variability	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	xi, 24	Exec Summary states that the NAPA development process was participatory, both at national and local levels (no other details on what this means). P.24 includes more details stating the selection of the analytical method: this included a method that allowed and promoted discussions with various stakeholders; held regional workshops and meetings. Once several options were identified, however, these options were ranked by a taskforce that included representatives from various ministries (no reference to the general public, however)	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	63-64	States that the NAPA Process included national consultation, which was participatory and included workshops held throughout the four identified regions of the country (could use a little more detail on what was done precisely, but it provides more detail so far compared to the other two plans assessed)	1
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	37	Option selected protects and conserves vulnerable natural environments; however, there is no reference specifically to it being to protect habitat corridors	1

Jan-07	Burundi	Present	Page(s)	Notes	Weight
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	NA		Landlocked country	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	19	Make reference to a national policy: PRGSP (purpose to reduce poverty and encourage growth); also state how the NAPA is related to both the UNCCD and the CBD.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	pp. 32 - to end	Each project lists monitoring and evaluation steps as well as the overall project duration	2
	Implementation strategies should be both short-term and long-term	Y	pp. 32 - to end	The projects described show different strategies with a scope from short- to long-range	2
					18

Dec-07	Cape Verde	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	1, 32	State the population in 2002, and state that 53.7% are urban. It is an archipelago, so no details on where they are located. State that extreme poverty is mostly found in rural areas, although also increased in urban areas. States that 80% are concentrated in the coastal zones	2
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	1, 2, 3 6 - 9	Give an explanation of the geography (generally very steep, high elevations, no permanent water courses). Explain the climatic situation in detail (effect of sea current flows on rainfall); explain the average annual rainfall and temperature (distinguishing between arid coastal zones). Includes graphs that illustrate rainfall variability recorded at three different stations, and average temperatures for various years. Describes socio-economic effects of climate change. Includes 2.5 pages of a chart listing the phenomena and events of climate nature on one side and the impacts of climate changes on the other (these are divided by phenomena in the coastal zone mgt and tourism sectors, in the water sector, in the agro-sylvo-pastoral sector.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	11, 12, 32-34	Goal 3 talks about protecting and preserving against degradation, the coastal zones (one reason is to preserve the disappearance of some species). Mention one way to protect and manage scarce water sources is to protect ecosystems. Don't state "corridor" specifically, but do state the need to preserve the habitat	1

Dec-07	Cape Verde	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	11, 16, 25-28	One of the three goals stated at the beginning: promoting water management in order to guarantee water for the people, food production, ecosystems, and tourism. Activity: construct infrastructures for collection, supply, and storage of water and recharge of aquifers; protection of watersheds	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	11, 12, 16, 29-31, 33	Goal 2 is to develop adaptability of the agro-silvo-pastoral production systems to ensure and improve national production. Activity: helping those that live off of the coast learn new methods to support themselves (micro-credit, etc.) In addressing coastal zone, the report states they will use micro-credit to diversify economy	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	13	States that the government desires to help the local communities (in part by replicating their best practices, and in part by supporting them in actions and with investments that they can't do on their own).	1
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	3, 13, 17, 18	State, "as per the guidelines, the formulation of … NAPA followed a participatory process that involved . . . Rural people and the poor." States, "NAPA process builds upon existing coping strategies implemented by local communities in order to enhance their adaptation capacity." State the importance of a participatory method (using both local knowledge and science). Includes a section (17) where lists the different actions that were taken. Lessons learned section states the benefit of the consultative workshops that permitted better participation of civil society, the municipalities and the socio-professional groups	2

Dec-07	Cape Verde	Present	Page(s)	Notes	Weight
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	12	Need to protect and preserve the coastal zones	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y	16, 33	State activity where infrastructures for protection of coastal zones will be rehabilitated and/or constructed. State research and action will be taken to use different materials and methods of construction along the coast	1
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	iii, 1, 15	Preface makes reference to several national policies: Programme of Fight Against Poverty and National Environment Action Plan. Give details of the implementation of a development strategy (for economic growth). State that the goal of the NAPA is to increase the resistance of Cape Verde to CC in order to achieve the development objectives of the policy referenced above. In the section stating criteria for selecting priority activities, states that they must have synergy with existing policy.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	19	State that monitoring and evaluation will be an integral part of the programme. That it will consist of data collection, treatment and analysis. Evaluations will be made based on the established indicators. Actual methods are vague and no timelines are listed	1
	Implementation strategies should be both short-term and long-term	Y	13	Make reference to a need to have a transition to a greater understanding of the effects and ways to adapt for climate change over the short, medium, and long terms. The second project states how the project will have an effect in the medium term as well as in the short and long terms	2
					19

May-08	Central African Republic	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	11	State density for two different regions (1 person/square kilometer in Region 5 and 9,295 people/square km in Region 7). P. 15 shows a map of the country with regions broken up and showing the percentage of poor people by region.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	23-43, Project 8	These pages list the vulnerabilities in the country by first including a table that lists the different zones in the country (under which specific regions are listed), and their vulnerabilities should they experience low or high rainfall. Additionally, the five vulnerable sectors of the economy are also listed, with specific vulnerabilities by sector. An explanation of outcomes is included for various possible scenarios under the different sectors. P8: seeks to reinforce human capacity and meteorological technology to give local projections on climate change impacts that could help prepare communities for these effects.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	Project 4	P4: in the justification for the project, they talk about the importance of preserving endangered fauna. The objective of this project is specifically stated as the conservation of exploited forest areas by establishing local conservation structures.	1
	Protect water sources to ensure water quality and quantity	Y	Project 7	P7: aims to improve quality of life for the population of Imohoro through improvement and provision of potable water. (Focused on one village only.)	1

May-08	Central African Republic	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	Projec t 1, 2, 3, 5, 6, 8, 9, 10	P1:train community to manage natural resources; support micro-credit programs. P2: will train & inform the community on ways to preserve & reforest areas; train specific individuals on reforesting techniques. P3: train the community & herders particularly on methods of raising their cattle in a more climate efficient manner. P5: introduce cultivation of climate change resistant species to ensure food security. P6: train the community on alternative methods of energy other than burning of wood; provide for installation of boilers. P8: creating & improving a local meteorological system; train local individuals as scientific technicians. P9: train leaders, the community in general, & other community partners on the possible negative effects of limcate change (one of the hoped for results is a regional plan of action with steps on how to fight climate change). P10: goal is to improve the public health of communities vulnerable to climate change effects. Inform the population on good practices to prevent diseases that will be on the rise due to climate change (warmer temp and more rain). Will train medical personnel on specific illnesses that are thought to be more prone to spread with the effects of climate change.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	21, 22	Describes how the NAPA was developed: starting with the formation of a coodinating body composed of representatives from various backgrounds and all guided by the ministry of environment.	1

May-08	Central African Republic	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	4, 8, 19, 20, 22	Statement in the Exec Summary that both the identification of the vulnerable sectors, as well as the selection of prioritization criteria were also done through a participatory method. A statement is made by the minister of water, forests, hunting, fishing and the environment that the results of each phase were regularly submitted to the public and to members of the task groups to validate the results. Section explaining the process undertaken to elaborate the NAPA, it states that it was a participatory process where local communities, and both men and women participated.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	Projec t 2, 3	P2: has the objective of expanding the plant and forest cover around urban areas and in other forested areas. P3: Goal is to rehabilitate degraded pastoral areas (resulting among other things the improvement of botanical diversity, as well as an increase in the fauna and floral diversity).	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A landlocked nation	0

May-08	Central African Republic	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	19, Section V	Statement in the section explaining the process of development of the NAPA that it was done in a complementary fashion - to build on the existing plans and programs (including the UN Strategies Against Desertification, Promoting Biodiversity, and other national policies. The section on the identification of priority areas states and shows what was considered in this identification. One of the considerations was the National Strategy Document against Poverty (as well as other documents/strategies that are not specifically stated in this section). Each of the projects list the programs/policies/strategies with which they are linked.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	y	Projects 1-	Projects include a list of indicators that will be used to monitor the programs, and some of them include statements that give a sort of timeline (i.e., "at least 10 acres reforested each year"). However, not all the projects include these type of statements.	1
	Implementation strategies should be both short-term and long-term	Y	Projects 1	Most projects do not include a list of the short- and long-term strategies or outcomes (as the other NAPAs have included); a few of them do (Project 8, for example)	1
					15

Feb-10	Chad	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N	7	P.7 lists the numbers of mammal and bird species (no specific names given). Reference is made to species that are specific to the region.	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	8	General statement is made about the population in 2005, followed by density information (stating extremes of population density, from 0.1 habitants/square km in some areas and 54/square km in others). These areas are listed. It also states that 80% are rural.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	ix, 16-29	A couple different models were used to project climate change impacts. These results are listed and include specific temperature projections for different parts of the nation (seeing a general upward trend), as well as projections for precipitation (some regions seeing a slight decrease and others a considerable increase - 50-60%, some even projecting an increase by 100%). Pp16-29 give more detail on the observed climatic changes (shown by region and including tables showing the change). This section explains that the MAGICC/SENGEN model was used to obtain projections for temperature and precipitation (both of which are included, again by region). An additional section on p.25 explains potential impacts on various sectors, divided again based on the region of the country.	2

Feb-10	Chad	Present	Page(s)	Notes	Weight
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0
	Protect water sources to ensure water quality and quantity	Y	41	Project 1: entails the management of water to ensure there is enough water for cattle and ag workers. These include reforesting areas, creating dykes and dams, gardens and irrigation spots are located near water points	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	43, 45, 47, 53, 55, 57, 59	of crops that are better suited for climate conditions (will spread the use of these crops and educate the community on how to grow them). Project 3: will update and distribute crop calendars that take into account the recent changes in the climate; purpose is that farmers will know the best and most efficient times to plant crops. Project 4: entails informing, educating and communicating the effects of climate change to the general population, so that they know how to respond and how to be prepared. Project 7: will improve projection techniques to improve the preparation of ag workers. This system will result in technicians being trained to manage it. Project 8: will create a National Observatory on Climate Change - this will produce information for policy makers, producers, and others that rely on the environment. Project 9: will create fodder banks that allow herders to have access to food for their herds when there are dry spells; reducing the need for them to move to greater and further distances. PRoject 10: will create a system to project and model climate change scenarios. It	2

Feb-10	Chad	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	vii, b	Statement is made that after gathering data from the community and identifying priority areas, a meeting was held where politicians were gathered to inform of the findings, to help with the integration of these projects into current national strategies for the country's development, as well as to create a National Framework for Adaptation Policy. Annex explains the process taken to produce the NAPA. It includes a section listing the role of the government in its creation. This role includes setting up national coordination for the NAPA, setting up the National Committee for the Orientation and Piloting of the NAPA Process, setting up the technical team of experts, and assigning a place for the national coordination.	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	iv, vi, b	Preface states that there were three approaches that were taken to create the NAPA. The first was that it was "a consultative and participatory approach." Meaning that stakeholders were consulted: from the regions, communities, private sector, NGOs and the civil society. Statement is also made that part of the process in creating the NAPA was in first identifying the current endogenous actions taken by the communities to adapt to climate change, and using these as the basis for policy development (included is a list of the practices identified). Workshops were held in one central location for every bioclimatic zone, with representatives from local populations, youth, village and religious leaders, women, business people, NGOs, and strangers.	2

Feb-10	Chad	Present	Page(s)	Notes	Weight
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A = Chad is a landlocked country	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	iv, vi, viii, xii, 29-31	Preface states that there were three approaches that were taken to create the NAPA. The third is that it be "complementary" - meaning that it should have synergy with other national programs, as well as with multilateral environmental accords. NAPA seeks to integrate within the national plan for development. It is stated on p.xii that the National Strategy on the Reduction of Poverty (ratified in 2003) was revised in 2007 to take into consideration the risks identified with climate change. The amendments resulted in additional priorities given to agriculture and the development of the rural sector, with the principal objective being to grow food production and revenue of the rural. Reference is also made to the UN Convetion Against Desertification and the Convention for Biodiversity. Statement is made that the country's part in the two UN conventions mentioned helps the country avoid duplication of efforts (preservation of biodiversity and fight against desertification are efforts mainly attached to these two conventions).	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	41, e	Projects include a list of indicators that will be used to measure the effectiveness of the projects. A general statement is made showing that an evaluation of the projects will be done half-way through the time proposed as well as at the end of the proposed time.	2
	Implementation strategies should be both short-term and long-term	N	41	Projects do not break down actvities by short- or long-term timelines.	0
					15

Mar-06	Union of the Comoros	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	Y	12, 13	It recognizes the importance of the species. It "offers a great originality translated by the . . . richness of its biodiversity . . . The variety of the coastal and marine ecosystems (mangroves, coral reefs, beaches, under marine herbariums) constitutes a potential that should be protected and valued, from the tourist point of view." Comoros is ranked among the 20 islands or archipelagos characterized by their endemic diversity. Because of the richness of its endemic species, it needs "high priority" in its conservation. Estimated 2000 plant species in the three islands. At least 50 are endemic. State the importance of preserving these species in order to ensure the stability of the ecosystem. P. 13 includes a table listing the number of different species, the number that are endemic, and the number that are endangered.	2
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	18	p. 18 includes a detailed chart of a demographic profile of the country. This includes the percentage of the coastal population, urban populations, in poverty, in poverty in rural and nonrural areas, employment ratios, etc. p. 5 Does not list population by location, but does identify the percentages of the population that are in the various sectors that have been identified as most vulnerable (subsistence farmers and fishermen, 62%, cash crops farmers and cattle breeders, 45%, non-working populations, 41%, and those who do not depend on the informal sectors, 39%).	2

Mar-06	Union of the Comoros	Present	Page(s)	Notes	Weight
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	5, 10, 17, 20, 23, 24-30, 28, 30-31, 35	Most vulnerable areas: those with low pluviometry, usually located in the eastern part of each of the islands. The 2nd step in developing the plan consisted of creating an inventory & an analysis of climate risks and their impacts on the sectors, the ecosystems and the involved human groups. Describes the changes in amount of cultivable land, amount of deforestation that may take place, disappearing of beaches, erosion in beaches (these descriptions are not local or regional, however, they are just general for the country, but much more detailed than other countries). Also includes detailed information on the irregular precitipation that has been observed. State the soil degradation that has occurred in the three islands. Section on vulnerabilities by sector (ag, forest, cattle-raising, fisheries, water resources, health, and infrastructure). Chart that shows population by island (2002, and projected pop in 2025), water supply, and current and projected water demand. Explain the typology of the most vulnerable zones.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	66-67	No specific reference to corridors, but they do have project 3 focused on protection of endangered tree species and the species that live in forests	1

Mar-06	Union of the Comoros	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	7, 61, 65, 68-69, 71-72	Exec. Summary states that water access and quality will be improved through the development of hydraulic systems in the villages and the generalisation of water treatment. Project 2: includes soil restoration that will result in better recharge of underground water. Project 4: increase of water supply. Project 5: improve water quality	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	7, 61, 62, 76, 77, 79-80, 81-82	Exec. Summary states the introduction of Fish Concentration Mechanisms as a new method of fishing that will increase catches; it also states the promotion of aviculture as an activity that could contribute to employment, particularly among women. Project 1: introduction of new crops more resistant to drought. Project 7: in addition to constructing homes more resistant to climate change effects, this project will train the community in new skills. Project 8: fodder production for goat breeding - trains breeders on new techniques. Project 9: creation and expansion of poultry industry. project 10: training community in new fishing methods in order to increase	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	42, 53	Composition of the pilot committee (responsible to implement the NAPA) is supervised by the Ministry of the Environment (highest level), and made up of reps from vulnerable groups, NAPA island committee, institutions involved in island development, associations, civil society, private sector, experts. NAPA Elaboration Process clearly shows coordination between all levels.	2

Mar-06	Union of the Comoros	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	10, 22, 32, 45, 47, 51, 53	State that the first step of the development of the NAPA involved conducting a participative evaluation on the vulnerability of the social and economic key sectors, the ecosystems and the most vulnerable groups of populations, identified from public surveys and expert opinions. Refer to comorian farmers and their input stating that they have observed historical recordings related to climate change and its variability. Make reference to the population listing impacts of climate change, listed in order of importance (table p. 32). **State that around 1,000 persons were surveyed.** In the methodology, they state that the areas were prioritized based on weights, as determined most important by stakeholders through surveys. Includes a table (51) that shows how many people prioritized different options in each of the islands. state that the priorities as listed by island are different than the overall priorities, but that it is important to note the level of priority given in each island due to different conditions in each island. (p. 53, #10 states a public survey was conducted on the three islands)	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	66,67	Project 3: addresses forests and their preservation. States that preserving them will regenerate degraded forests (but there is no specific reference to corridors)	1

Mar-06	Union of the Comoros	Present	Page(s)	Notes	Weight
	Policies that take into consideration water access and quality, while allowing for flexibility	N		Have strategies and projects proposed but no stated policies	0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y	75-77	Project 7: Encourages construction of more climate-resistant structures to improve safety of population	1
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	36-41, 42-44	Includes a section showing the relationship of the NAPA with other development programmes, stating that the NAPA was created to increase the efficiency of these programmes (programmes listed by sector). Also states what each of various programmes has achieved (good to show their success - for further funding of new projects)	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	63-88	Projects include the evaluation indicators for each project (possible monitoring methods), but do not include timelines	1
	Implementation strategies should be both short-term and long-term	Y	54, 62-88	Process includes stating that document will be translated and that leaflets summarizing the main points will be distributed in schools. Each project states the short- and long-term goals hoped to be achieved	2
					22

Sep-06	Democratic Republic of Congo	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N		Reference is made to endangered species (particularly in the mangroves area), but no actual list is included	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	8	60 million people with around 30% living in urban areas (the majority within urban areas live in slums)	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	10, 11-19	Section explains general vulnerabilities of the nation, but also includes projections for specific regions of the country (country divided into four zones). Climate Change models were used to project both precitipation and temperature changes for 2050 and 2100. This section includes a diagram that shows the various sectors and how certain populations are more or less vulnerable within these sectors. A chart shown on p. 18 and explained in the following page reveals that the poor in urban zones are the most vulnerable to climate change impacts.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	52	Project: conserve and manage the biodiversity of the Marin Mangroves Park	2
	Protect water sources to ensure water quality and quantity	N		Project list includes something related with water, but it is not one of the projects that is then further detailed.	0

Sep-06	Democratic Republic of Congo	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	38, 52, 56	Project related to agriculture: seeks to provide seeds that are more resistant to climate change effects and that would also yield higher crops. Project conserve and manage the biodiversity of Marin Mangroves Park will also entail training the community on better practices so that the coastal resources are preserved. This project will also train women in specific on new methods to salt sea, on oyster culture, training them on public health concerns, provision so that these women along the coast can also get involved in gardening.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	4, 5-6	Workshops were held throughout the formation of the NAPA that included representatives from the government, as well as other sector representatives. Pp. 5-6 explain the process that was undertaken to create the administrative and coordinating bodies. P.6 includes a diagram that shows the structure of the coordinating bodies. It shows that the body with general oversight is composed of the general secretary of the environment, other secretaries, minister of plan, energy and budget, and the director for sustainable development. Under this group is another group that entails a project coordinator, other consultants, and administrative assistant and budget person. THese are over a technical expert team and another national committee of climate change that has 33 members.	2

Sep-06	Democratic Republic of Congo	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	4, 5, 7, 13	A statement is made at the beginning, listing the NAPA Guidelines as developed by the UN and stating that the DRC used these guidelines to develop the NAPA. It further states that various parties were involved in different workshops and forums (consultants, technical experts, members from a Climate Change Committee, NGOs, reps from the government, and other private entities. After several documents were prepared on climate change, vulnerability, and adaptation, a technical team, as well as six other experts went throughout the country to collect and share information about the NAPA. P. 7 further explains how the groups were involved. It states that several workshops were held, in particular a paragraph explains the involvement given to women. Women were contacted in their daily activities and their needs were translated into priorities. P.13 states that a total of 2,800 people were surveyed; it breaks down the demographic component of these people (21% were women).	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	52	Project: conserve and manage the biodiversity of the Marin Mangroves Park will include educating the community on the value and importance of conservation (starting in the elementary schools).	2
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0

Sep-06	Democratic Republic of Congo	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	50-51	These pages simply list all of the environmental policies adopted and accords signed related to the environment.	1
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	38	Projects clearly state the indicators by which success will be measured. However, there is no timeline for when monitoring will take place.	1
	Implementation strategies should be both short-term and long-term	Y	61	Projects include activities that take place throughout the lifetime of the projects. A Table is included that lists all the proposed activities and checks off the month they will take place. This table also includes a column listing the expected results.	1
					16

Oct-06	Djibouti	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	19	Out of a total of 700,000 people in 2004, 2/3 of the population live in the capital. A large majority of the remaining population lives in secondary villages (only 15% of the pop is estimated in being rural).	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	25, 26, 27, 31-42	Pages include tables, narrative, and diagrams that show the vulnerabilities faced by the country (including written explanation as to where the vulnerabilities will take place). Vulnerabilities are broken down first by what impacts climate change will have on the economy, population, and environment. Then, a section explains the effects of climate change on various sectors (water resources, agriculture, etc.), and another explanation on how these sectors wil be particularly affected in certain regions of the country.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0

Oct-06	Djibouti	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	55, 60, 66, 70, 73, 78	Project 1: several objectives, first being to regenerate and protec the mangroves; also to improve the provision of water for local coastal communities. (Damage done to mangroves has harmed the recharge potential of the earth.) Project 2: also has the goal of protecting water sources by preserving the forest ecosystems. Project 3: seeks to improve water access to herders and their cattle. Project 5: seeks to fight against salinization of lands in order to protect water sources. Project 6: has one objective of improving water resources for the breeders and their cattle. Project 8: protection of water resources fo rthe residents of Djibouti City; reducing salinization and protecting water production sources and protection of the water feeder sources.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	55, 60, 66, 71	Project 1: seeks to improve ag practices of the coastal area so that the earth has better opportunities to recharge water sources. Also seeks to bring in new activities through diversification so that the communities are not fully dependent on coastal or ag activities. Project 2: will promote alternative methods of generating income (that do not require cutting down forests). Will also train the community to know the important roles played by forests. Project 4: seeks to improve the natural regeneration of pastures by encouraging different methods for cattle grazing and crop growth; training new veterinarians. Project 5: seeks to improve ag techniques, by training farmers on ag techniques that are adapted to their local context; as well as the introduction of proper water extraction techniques.	2

Oct-06	Djibouti	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	55, 60, 66, 72	The coordination of the plan is listed as being the work of various groups and interests (including different committees and NGOs and the general public). All of this work is done alongside the partnership of the Environmental Ministry's action and participation. Part of the coordination entails having the ad hoc committee presided by the Secretary General of a Ministry from the government, as well as having representatives from both the Presidential and Prefecture Councils (the purpose of these representatives was stated so that the results would be validated and supported by the government).	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	55, 60, 66, 73	Explain that the projects were prioritized on three different dates with 35 participants representing different public administrative agencies, as well as civil society reps (including women and other reps from each district). In the explanation of how the NAPA was developed, a statement exists that the needs in particular of women and children are taken into consideration because of their extra vulnerability. Various workshops took place: one to initially inform the community about the NAPA process, another one to examine the results of the experts concerning the identified vulnerabilities; followed by five others in different districts of the nation. A diagram is shown on 54, visualizing the different groups involved and their roles in the process.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	55, 60, 66, 74, 76	Project 2: has one goal of preserving the forest ecosystems for the protection of water sources. Project 7: restauration of mangroves and protection of coastal ecosystems (through sensitizing the community to these vulnerabilities, protection of mangroves, and regeneration)	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0

Oct-06	Djibouti	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	13, 42	In the Exec Summary, the different policies and strategies that are linked to the NAPA are listed: a national plan for the environment, one that fights against desertification, another to protect biodiversity, another coastal management plan, a plan that addresses the economic and social aspects, and one that fights against poverty. Further explanation is given on p. 42 (on the policies and how they are related to the NAPA).	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	55	Project descriptions include a detailed description of the different agencies/bodies that will be involved in the carrying out of the project. But, under the monitoring section, a statement is made that a a scientific committee will be created to serve as a monitoring body. This committee will regularly provide reports to the pilot organization. There lack actual timelines or methods for monitoring and evaluating.	1
	Implementation strategies should be both short-term and long-term	Y	55	Implementation projects include both long and short-term results and activities that would be done in both short and long term.	1
					16

Apr-07	Eritrea	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	1	State that more than 80% of the population lives in rural areas and that much of the total population is clustered in the cooler climates of the central highlands (no specific percentages)	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	2, 6	List current avg annual rainfall by regions within the country. State that the main feature of rainfall is the extreme variability within and between years, as well as spatial variation over very short distances. Section with listed vulnerabilities states for example specific areas of the country that are more vulnerable to water supply and quality (but does not give impact projections)	1
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	4, 35	State that depletion of forests threatens biological diversity. Project 3 states that marginal land will be afforested (but not specific for preservation of threatened or endangered species)	1
	Protect water sources to ensure water quality and quantity	Y	29-30, 35, 37	Project 1 entails constructing structures to conserve water, water points, and training communities how to manage water. Project 3 includes afforestation, resulting in restoring degraded watersheds and protection of downstream water reservoirs. Project 4 deals with the enhancement of ground water recharging (to ensure water supply for domestic and ag use)	2

Apr-07	Eritrea	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	32, 35, 40	Project 2 entails using certain breeds of goats and sheep that are better suited for climate change. Introducing these breeds to local farmers in the southeastern region of the nation. Project 3 includes training communities to integrate tree planting and management in their farming systems. Project 5 includes establishment of new ag methods	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	iv, 3, 10, 13, 17	In acknowledgements, state thanks for collaboration between the Dept. of the Environment, other entities, and many different individuals. Make reference to a stakeholder consultative process. State the various ministries involved in coordinating environmental actions. State that individuals from both governmental and non-governmental organizations, grass roots communities were consulted. p. 13 includes a box with the different stakeholders consulted. States formation of administrative structure that included senior policy makers, experts and specialists, and personnel responsible for day-to-day administration	2

Apr-07	Eritrea	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	iv, 1, 10, 13, 17	In acknowledgements, state that there was a stakeholder consultative process (no details in this section as to what this entails). Intro states that there was "extensive" stakeholder input. Identification of key adaptation needs section states that there were extensive stakeholder consultations (including rural heads of households - were these mainly men?, farmers, pastoralists, fishermen, govt officials, academic researchers, women's groups). Mention conducting a kick-off workshop to publicize activities of the NAPA team that was participatory.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	35	Policies and strategies to afforest regions (reestablishing corridors)	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N		p. 9 lists a barrier to the NAPA implementation as one being that there is a lack of approved laws and regulations that are directly linked with CC like environmental law, water law	0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	2, 3, 7, 14	Make reference to their economic policy (Macro-Policy Paper) developed in 1994 (see Note 1 below), and to their National Environmental Management Plan (1995). P. 7 gives into more detail on some of the policies that are parallel to the activities and aims of the NAPA. In the list of the evaluation criteria that were used to rank the different projects, two out of the seven are related to synergies with multilateral environmental agreements, and synergies with national plans	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y/N	30, 36	Projects 1 and 2 state that they will prepare a monitoring and evaluation system to be carried out by the Ministry of Ag, community, and local government. But the actual monitoring to be done is not stated. Project 3 does give a little more detail on what the monitoring will entail (carried out after rainy season and in the late dry season; to be done by village development committees, forest extension agents, and subject matter specialists)	1
	Implementation strategies should be both short-term and long-term	Y	29-41	Projects include both lists of short-term and long-term outcomes	2
					17

Jun-07	The Federal Democratic Republic of Ethiopia	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N	8, 31	Not present, but one of the projects proposed is that of building regional capacity for monitoring and inventorying of biodiversity. P. 31 states that wildlife sector is one threatened, in particular the species of flora and fauna that are endemic and threatened already.	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	2	Includes a table showing socio-economic indicators. Within the table is the percentage of the pop living in rural areas and the percentage living in urban areas, but no more detailed.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	1, 3, 4	Include graphs and explanation that Ethiopia's annual min temp has increased over the past 55 yrs. Used Climate Scenario Generator software to determine projections for Ethiopia for three years: 2030, 2050, and 2080. P. 4 shows composite change in temp and in rainfall for these three years for different regions of the country.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N		p. 16 Refer to environmental problems including loss of biodiversity.	0
	Protect water sources to ensure water quality and quantity	Y	11, 72, 79-80	Project 3: develop small scale irrigation and water harvesting schemes in dry areas. Project 7: water development project.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	11, 74, 82, 84	Project 4: improving/enhancing rangeland resource management practices. Project 9: the establishment of a national climate research center (would train communities in the long-run). Project 11: Promotion of on farm and homestead forestry and agro-forestry practices.	2

Jun-07	The Federal Democratic Republic of Ethiopia	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	12, 36-37	State the members of the project Steering Committee. These include reps from different governmental ministries, other agencies, universities, and one organization representing NGOs. However, there is no organization representing the general public or any reference to the general public. One of the barriers to the implementation of the NAPA is actually stated as, "lack of srong coordination mechanism both at the federal and regional levels to maximize climate change adaptation gains." As well as inadequate cross-sectoral links of the ministries and line depts.	1
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	vii, 7, 18	In foreward, state that stakeholders were consulted to help identify vulnerabilities. Refer to two national and eight regional consultative workshops. Does not, however, state who was present in those workshops. Include photos of the workshops. Most of those present are men. Cannot tell from the photos if the general public is present, even though further explanation on p. 13 states that 500 participants were present from the grass roots population. P. 18 states that the consultation process included gov't institutions, academia, NGOs, and sectoral experts in 8 regional states (no mention of community).	1
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	Y	31	Refer to the Water Resources Management Policy (already established but that is relevant to climate change)	1
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0

Jun-07	The Federal Democratic Republic of Ethiopia	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	vii, 6, 10, 17,33-35, 43-44	In foreward, reference is made to policies, strategies and programs that enhance the nation's adaptive capacity and reduce its vulnerability (plan for development and end of poverty, environmental policy, ag and rural dev policy and strategy, etc.). Policies restated again on p6. When describing how the projects were prioritized, a table is included that shows weights given to different criteria (two of the criteria are that the projects complement other policies/strategies and that they have synergy with national plans). States a National Climate Change and Air Pollution policy in place and states its desire for more similar policies as a result of the NAPA. Includes a very good table on p. 34 that shows the extent of complementarities of the current national policies and strategies and the NAPA. list the specific projects that have synergy with other Multi-lateral Environmental Agreements.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	68-85	Do include a small description of the evaluation/monitoring that will occur; this description, however, is not detailed at all and does not include specific timelines. The description for the evaluation/monitoring is word-for-word verbatim for the different projects.	1
	Implementation strategies should be both short-term and long-term	Y	68-85	Project descriptions include both short- and long-term outcomes.	1
					14

Nov-07	The Gambia	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	Y	5, 22-27	In the exec summary, it states that the NAPA preparation process has been useful in uncovering areas of research that are needed and would add value to the adaptation strategies. They state that it is important and necessary to research species composition of various forest biomes and dieback phenomena. In the chapter where they talk about vulnerabilities by region, they list several species that are endangered by rising sea level.	1
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	N			0
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	11, 12, 20-21, 21-27	Includes maps that show spatial and temporal changes in rainfall in the last 60 years (as well as bar charts by regions p.12). Includes a map of areas and a table with different cities that would be flooded at different scenarios (50 and 100 cm) of sea level rise. Includes a chapter that goes into detail to explain the possible detrimental impacts of climate change by region.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0
	Protect water sources to ensure water quality and quantity	Y	62	Project 2's purpose is to ensure adequate supply of fresh water.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	64, 67-68, 70, 73, 78, 84	Project 3: introduce new ag practices. Project 4: introduces sustainable forest resource exploitation strategies. Project 5: promotion of appropriate agro-forestry systems and reforestation. Project 6: training people in new energy methods. Project 8: improved livestock production approaches. Project 10: increase fish productivity through aquaculture.	2

Nov-07	The Gambia	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	30, 60-86	State that NAPA implementation will occur at three levels: Central and National; Regional; and Community. Explains what each level means (who's involved) and what they will be responsible in doing. All the projects include a list of departments/ministries, agencies, and other entities that will, together, work to implement the project.	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	2, 28	State that a cross-section of society was involved in stakeholder consultations (gov't offices, NGOs). State that in order for the strategies proposed to actually be effective, the public participation that was initiated during the NAPA prep process needs to continue.	1
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	32, 71	When talking about present policies and strategies that align with the NAPA, reference is made to strategies that will strengthen the management of contiguous forest and wetlands. Project 5 doesn't specifically state "corridor" but does state that outcomes of the project will be "large areas of regenerated forest cover."	1
	Policies that take into consideration water access and quality, while allowing for flexibility	Y	62	Project 2 also has a component of developing and adopting appropriate policies for water accessibility.	2
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y	81	Project 9 talks about improving coastal defences (beach stabilization, groins, rehabilitation of wetlands), but this does not include moving from shoreline or developing structures that are better suited/adapted to rising sea level.	1

Nov-07	The Gambia	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	1, 31	Exec Summary states that the NAPA interacts and overlaps to some extent with its flagship environmental mgt and poverty reduction programmes. Includes the relationship between the NAPA and other national development plans.	1
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	60-86	Project descriptions include monitoring methods, but they do not include timelines and the actual monitoring methods are vague.	1
	Implementation strategies should be both short-term and long-term	Y	60-86	Project descriptions include short- and long-term outputs	1
					17

Jul-07	Republic of Guinea	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	N			0
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	vi, 9-20	In the introduction, there is already information that states the current climate trends and future projections. (Before presenting further projections, p.3 displays several maps that show precipitation and temperature trends for the various regions in the country.) Additional impact projections are described and illustrated starting on p.9 These projections include description of vulnerabilities by sector (first including a table on p. 13 that shows the effects and where in the country these are already being see; followed by another chart that lists these same effects, but with a list of their consequences and the tendency of their occurrence). p.18 states a summary of the vulnerabilities faced by the country. These are listed by sector (sector and the biological vulnerabilities most evident, as well as the vulnerabilities less evident)>	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	44	Project2.1: will identify and promote the use of endogenous practices to adapt to climate change that will protect ecosystems and preserve biodiversity.	1

Jul-07	Republic of Guinea	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	49, 53, 61, 63, 64, 65	Project 3.4: through promotion of practices that use less wood, one of the expected outcomes is that water sources would be preserved in the forests. Project 3.7: seeks to preserve forest cover by promoting the use of hedges and even fences to protect the forest, and thus resulting in protection of water sources. Project 7.1: will construct various micro-dams to help protect water sources for the population. Project 7.2: will also create dams to help those in ag, pastoral and even domestic sectors have water during dry seasons. Project 7.3: will seek to improve the use of underground water by improving the efficiency of wells. Project 7.4 will seek to improve the quality of potable water by using a system called hydropure. Project 7.5 will seek to improve systems that collect rainwater, in order to improve access to water during dry seasons.	2

Jul-07	Republic of Guinea	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	41, 45, 46, 49, 51, 52, 54, 58, 67, 68, 69	incorporates readiness for climate change by promoting the cultivation of the cashew in specific regions of the country that are drier (cashew is more resiliant to these conditions). Project 3.1: will train communities in a new practice of rearing oysters in the mangroves in such a way that damage to the environment and other species is lessened (contrary to current practices). Project 3.2 will promote anti-erosion practices to protect soils. Project 3.3: will promote the use of solar energy for fish drying (so as to reduce the use of wood).Project 3.4 will promote the use of brick making through the compression of earth (reduces the amount of wood needed to create brick). Project 3.5 will promote the use of species that are more resistant to dry conditions (particularly in regions that are already marked by high levels of poverty). Project 3.6 will train the community and promote the use of solar energy to extract salt from water - in order to preserve the mangroves, which suffer degradation because of the current practices. Project 3.8: will create a projection system to help farmers be better prepared when	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	ix, 73	The Government's role is described as forming the Pilot Committee, designating a coordinator for the national project, locating a location for the various meetings held by the committee. P. 73 explains the various stages that took place to develop the NAPA. These steps include the coordination of the team, done by the ministry of the environment. It also shows the coordination that took place with 17 national experts from various fields, public consultation	2

Jul-07	Republic of Guinea	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	ix, 24, 29, 73	Process of elaboration entailed public consultations organized within the four natural areas in the country (these consultations involved NGOs, reps from technical services, community base). The NAPA lists the various endogenous methods that are currently being used by the community (self-identified) to adapt to climate change. The criteria used to prioritize the projects was determined as a result of public consultations.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	42, 55, 57, 66	Project1.2: will support the better management of the national forests that are currently being degraded. Project2.1: will also support endogenous actions that protect ecosystems (first identifying these practices, then encouraging them among other sectors of the community). Project 4.1 will fight wild fires that are currently pretty regular and that devastate the forests and are leading to possible loss of biodiversity and loss of forests generally. Project 5.1: will protect the coastal zone by reforesting degraded areas and encourage containment through polders (through dikes). Project 8.1: will seek to protect spawning areas within estuaries (through information to the community of their importance, delineating protected areas, reforesting of degraded areas).	2
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0

Jul-07	Republic of Guinea	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	vii, 7, 20-23	Includes a list of the programs that are related to the NAPA, and includes a description of how these programs are linked. P. 7 includes various laws that have been implemented throughout the years - these laws all seek to preserve the environment in one way or another. P.20 begins a section where the national policies that relate to the NAPA are described. These include a national strategy fighting poverty, a policy on agricultural development, a policy on animal raising, a policy on forestry, and a national plan of action on the environment. Additionally, there is an explanation of the synergy that exists between the NAPA and other multilateral environmental accords.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	41	Projects include a list of indicators that will be measured to determine success. However, there is no specific timeline related to the monitoring of the projects.	1
	Implementation strategies should be both short-term and long-term	N		Project descriptions do not clearly state the difference between short- and long-term strategies, nor short- and long-term results	0
					16

Dec-06	Guinea-Bissau	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	Y	20	So far, the most detailed listing of species. But these are not broken down by threatened species. However, they do list the number of species in the country, divide them into different types of species, and state that they are of international importance (particularly the bird species, which account for 1% of the world's species pop).	2
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	15	Does not give a number, but states that 80% or the pop is concentrated on the coastal zone. Again, does not give numbers but on p. 27, states that most of the pop lives close to springs, water points, or perennial and non-perennial rivers to ensure access to water.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	14, 35	Give projections for the country as a whole (temp, rainfall, and sea level rise), but not by region. In a further section of the report, more regional data is listed that shows current and country trends in rain and temperatures for the two regions of the country. Make reference to the use of a climate change forecasting model (Magic Schengen), which shows temp rise, rainfall decrease, sea level rise, and cloud formation rise).	1
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N		p. 20 states how the existing flora and fauna are threatened, and that the degradation of forest ecosystems is a present problem in the country (it represents in part the fragmentation of habitats, and interferes negatively with the fauna's migratory process).	0

Dec-06	Guinea-Bissau	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	61, 82	Project 2: Water-supply improvement project. (Construction of latrines.) Project 12: also seeks to improve rates of access to quality water by well-building.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	59, 63, 66, 68, 70, 72, 83	Project 1: relief to the food insecurity problem by diversifying production of other crops. Project 3: will train national technical staff in processing data to prevent and take protective action against sea level rise that damages rice crops. Project 4: will establish a program to monitor mangroves (creating and training staff in this function). Project 5: sets up a coastal areas erosion monitoring project to gain greater knowledge of coastal erosion and its impact on the environment generally and on the coastal zone. Project 6: sets up a national capacity building system that will train national workers in environmental evaluation. Project 7: training in small-scale irrigation schemes. Project 13: project that trains the community how to raise different animals that would provide food sources.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	46	Coordination of the plan falls under the NAPA National Committee, which is made up of reps from 15 institutes (9 from the public sector and 6 from civil society).	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	11, 42-43	Exec Summary states that the priority strategic actions were defined through a "widely participatory exercise." P.42 explains that a survey was conducted that helped identify vulnerabilities.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N	55	P. 55 mentions a programme that lasted from 2000-2006, where part of the program consisted of protection of corridors for wild fauna.	0

Dec-06	Guinea-Bissau	Present	Page(s)	Notes	Weight
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	12, 38, 53	Exec Summary states that one of the criteria was that the options have synergy with multilateral agreements on the environment. P.38 includes a table that lists the sectors, adaptation strategies related to the sectors and the linkages with national policies and plans. P.53 lists specific projects that are currently in place and that relate to the NAPA.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	59-	Projects include a monitoring paragraph, but it simply states who will be giving oversight for monitoring. It does not say how it will be carried out nor when. (Some go into this level of detail: "external auditing will be done regularly" or "different reports will be prepared as per requirements set out by donors..."). Project 6 includes a more detailed monitoring method.	1
	Implementation strategies should be both short-term and long-term	N	59-	Projects simply state expected results, but these are not broken down by short and long term.	0
					15

Jun-07	Lesotho	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N	5	p. 5 states the total number of species in the country and how many of those are plant species; however, there is no distinction made for endangered species.	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	1	No coastline; p. 1 states that 85% of the pop is in rural areas.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	7, 9-11	P. 7 refers to climate scenario models used to create projections. However, the data is not detailed, the paragraph simply includes words like, "higher," "gradually increasin," "lower," etc., but it does not give actual figures and projections. Pp.9-11 go into much more detail, listing the different zones in the country, the livelihoods that are characteristic of the zones, the pop., the vulnerabilities they specifically face. It also includes several maps showing vulnerability zones. P. 11 shows various GIS maps and the layers that were used to come up with a "vulnerability zones" map that combines the other maps, and comes up with a map of the country that includes three vulnerable zones.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	43	Project 7 states that part of the outcomes from the project is the protection of biodiversity around wetlands. But there is no specific reference made to corridors.	1

Jun-07	Lesotho	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	26, 26	Project 2: in part, this project seeks to promote water conservation strategies like drip irrigation to help with agricultural practices. Project 5: securing village water supply through several activities including tanks for roof water harvesting, rehabilitation of boreholes, installation of community water purification systems.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	21-23, 25, 40, 45	Project 1: Improve Resilience of Livestock Production Systems trains people in new livestock production methods. Project 2: aims to support the development and use of drought-resistant crops and the use of conservation agriculture technologies. Project also promotes water conservation strategies.Project 6: will train in new methods of land use to reduce incidence of erosion. Project 8: promotes development of different technologies for food preservation.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	10, 17, 18	In the list of stakeholders consulted, members include community leaders and parliamentarians, reps of gov't depts., reps of local gov't councils, NGOs, youth groups, and others. The Project Steering Committee consists of Gov't Depts and also Local Councils, Development Agencies, NGOs, National University, Local Initiators, Private Sector. P. 18 includes a good breakdown of the different role the different parties will take in the process (what the ministries and agencies will do, as well as NGOs, and Community-Based Orgs).	2

Jun-07	Lesotho	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	ii, 10, 9-10, 16	Foreword includes a statement that the NAPA was done though a participatory approach that included various stakeholders (from the grassroots levels to policy makers). P. 10 states that consultation workshops were held throughout the country to assess vulnerability zones and that these workshops were inclusive of concerned stakeholders. Does not state how the workshop attendees were determined or invited or of who those consisted. Stakeholder list includes reps of students from the national university, youth groups, traditional healers, reps of teacher orgs, community reps. State that stakeholder consultation consisted of fourteen workshops in all ten districts of the country.	1
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	42	Project 7: protection of wetlands (no specific reference to the importance of corridors; focus is on water quality).	1
	Policies that take into consideration water access and quality, while allowing for flexibility	Y	37	project 5: includes a component of developing and promoting community policies on sustainable use of water.	2
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A: landlocked country	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	3,4, 11, 30	State the different strategies that are related to the NAPA. Tables included in the report show how each option was scored. One of the scoring criteria was how much synergy is found between the option and other policies. These are all international strategies. Project 3 is actually a project geared at incorporating issues around climate change into the national agenda and national policies.	2

Jun-07	Lesotho	Present	Page(s)	Notes	Weight
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation		21-46	Projects include a section for monitoring, but the section is vague. Stating that the monitoring committee will work closely with different ministries (based on the project), and that it will be done regularly. It does not state who will compose the monitoring committee, nor what regularly means. Project 2 includes a statement that village monitoring committees will work together with the ministry of ag. It also states that the coordinating ministry will create quarterly reports. Project 5: states monthly basis monitoring by the Dept of Rural Water Supply, as well as quarterly progress and financial reports.	1
	Implementation strategies should be both short-term and long-term	Y	21-46	Projects include sections that list both the short- and long-term outcomes expected from the programs.	2
					19

Jul-07	Liberia	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	N	1	Does not say exactly how many people reside in different regions of the country, but it does state that population density is considerably higher along the coast and in the north	0
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	N		See note below about meteorological stations being completely destroyed in the civil war.	0
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0
	Protect water sources to ensure water quality and quantity	N			0
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	20, 22	Project 1: encourages farmers to diversify their crops, encourages lowland farming methods. Project 2: in reestablishing the meteorological stations, which this project proposes to do, they will also train personnel on hydrometeorology.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	11, 12	Description of the process to develop the NAPA includes evidence of coordination at different levels (through the creation of different oversight and coordinating bodies).	1

Jul-07	Liberia	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	xii, 9, 11, 12	Exec Summary states that stakeholder groups participated, to include civil society organizations, women groups, indigenous people, CBOs, National and Int'l NGOs, policy makers, academic and research institutions. Section on the Criteria used to Select Priority Projects includes a description of stakeholder participation to first come up with various projects, which were then ranked. Once that list was determined, those projects were presented again to stakeholders for a "Validation Forum." From this list, the projects were again reviewed, this time by high-level policymakers who selected three projects. Includes description of the NAPA preparation process, in which a workshop was conducted that publicized the NAPA and informed the public about the adverse effects of climate change. Annex I: includes a list of the various entities involved in the stakeholder consultation process (includes grassroots entities as well as governmental entities, but no specific group for women).	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y		Project 3: states an expected result of "establish[ing] coastal and urban growth planning schemes" but does not state what this would mean	1

Jul-07	Liberia	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	2, 5	NAPA refers to the National Reconstruction and Development Plan. There is also a whole and more detailed section that lists the different national goals, plans and frameworks. This section even lists some of the development goals within the policies and strategies.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	20-	Project states the indicators that will be used to review the efficacy of the project, but it does not state when these will be conducted or by whom.	1
	Implementation strategies should be both short-term and long-term	N		Project does not state short- or long-term goals, nor does it include detailed budgets that would give an indicator of different implementation milestones.	0
					9

Dec-06	Madagascar	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	2	18,000,000 people, with around 80% living in rural areas and 20% in urban areas.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	6, 6-8	p. 5 gives a general description of the effects of climate variability and climate change on five sectors that have been identified as key sectors (ag., public health, water resources, coastal zones, and forests). These effects are listed generally and not specifically to regions or localities. A section on p. 6 explains the projected climate change variabilities (referring to three different models used). These include a notable rise in temperature, reduction in rainfall generally (with even more intense reductions in the dry seasons while also having more intense rainfall in the wet seasons). Reference is made to the south part of the island, stating that this region is the only where the rainfall will simply remain the same as currently - very weak rainfall. Following this section, another follows explaining the projected impacts of climate change on specific sectors of the economy (ag and livestock, health, water, coastal zones, and forests). These sections are more regionally focused, explaining the current conditions and the particular vulnerabilities tied to the regions.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0

Dec-06	Madagascar	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	22, 24	Project 1: construction of dams and dikes to ensure the population has access to water for irrigation. Project 2: creation and revitalization of water management agencies that will help ensure the correct distribution of water to meet the population's needs.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	y	26, 30, 35, 36, 40, 42, 44	Project 3: seeks to increase ag production by changing some of the ag methods and activities. Project 5: will create a meteorological service that will result in the training of individuals in meteorology, and will also result in the general population being able to better adapt to possible climate change effects. Project 8: will result in personnel trained on how to reforest regions.Project 9: will include the information and education of the population on different methods other than burning for energy and wood. Project 11: seeks to continue to inform the community on meteorological conditions - this project will create the necessary infrastructure to communicate this information to the community and will result in trained individuals. Project 12: will train the population on possible health effects heightened by climate change and how to prepare for and respond to them. Project 13: train health care workers to be better prepared to address possible effects of climate change on the population's health.	2

Dec-06	Madagascar	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	53, 54	Section describing the preparation makes reference to the various organizations and representatives present (including those from local communities). Last page of the report (54) also states that the government has been engaged throughout the process (at different levels). the ministry of the environment and of water and forests have been involved and participating, as well as reference made to regional ministries.	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	17, 53	One of the five criteria used to weigh the adaptation options is whether the project includes community participation (this criterion tied in second place with two others). P. 53 explains the process taken to create the NAPA. The statement explains that the public was consulted in 12 out of the 22 regions (as well as expert consultations). Section also states that a multidisciplinary group was formed to help create the NAPA (consisting of various ministries and civil society representatives).	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	33, 35, 36	Project 7: seeks to restore the coastal zone that has been damaged through the plantation of mangroves and casuarinas (tree native to islands). Project 8: seeks to reforest lands that have been deforested due to traditional burning activities and other human activities. Will plant species adapted to the climate and region. Project 9: will promote the conservation of forests by transferring some of the power to locally created committees (from the national level)	1

Dec-06	Madagascar	Present	Page(s)	Notes	Weight
	Policies that take into consideration water access and quality, while allowing for flexibility	Y	28	Project 4: promotion of anti-erosion activities and the stabilization of dunes, partly through the support of policies that encourage these actions. (With the purpose of restoring sloping basins and the advanced degradation of forest ecosystems.)	2
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		(No, Project 6: construction of dykes and other structures to protect the coastal zone from rising sea level.)	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	9, 17	Section states that the NAPA is not a new sphere of the policies instituted in the country. It must be complementary to the current and principal development documents. These include a Madagascar Action Plan, the Millenium Development Goals, the General Policy of the State, the National Program for Rural Development, the National Politic for Decentralization and Deconcentration. One of the criteria used to weigh the projects is whether the projects are related to the multilateral environmental policies (this criterion tied second with two others). This shows the importance given to sharing the costs, non-duplication of efforts, etc.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	22	Projects include a section on evaluation, which lists a budget that includes the measureable outcomes and their costs, but it does not include a timeline for monitoring or methods for monitoring.	1
	Implementation strategies should be both short-term and long-term	Y	22-52	Project descriptions include both short- and long-term activities and outcomes. There is not, however, a lot of detail given to these items.	1
					18

Mar-06	Malawi	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N		x. One of the proposed interventions listed in the Executive Summary of the report (talking about the Forestry Sector), includes the periodic monitoring of plant development to identify species in danger of dying back (however, there is no reference to a specific database that would list the species). Project 5 refers to the 700-1000 fish species found in Lake Malawi, as well as the extinction of one species: Mbuna. It also talks about the threats to the habitats of this lake and the potential to lose biodiversity, but there is no database included in the report. One activity listed under this project is to create a fish gene bank to maintain genetic diversity of the freshwater fish resources.	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	N			0
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	25	p. 6 Statement that the most vulnerable areas to floods are the lakeshore plains and lower Shire valley. The whole nation is listed as being vulnerable to drought. Project 4: includes activities that would assess and determine flood and zoning maps to determine local and regional impact projections.	1
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0

Mar-06	Malawi	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	12, 25	Project 1: improving community resilience through the development of sustainable rural livelihoods includes improving access to water (including water treatment works), improving water management to withstand erratic rains. Project 2: restoring forests to reduce siltation will create buffers along the rivers to reduce the transfer of chemicals into waterways. Project 4: preparing to cope with droughts and floods (ensuring access to water - dams, rainfall harvesting structures, deep wells).	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	12, 21, 30	Projects 1, 2 and 3: promoting sustainable dimba cultivation, diversifying crops and livestock, building capacity (training) or rural communities, training farmers on agricultural husbandry practices, on storage, utilization and value-adding to their crops and animal products. Project 5: part of the project includes the promotion of short and long-term adaptation livelihood skills to riparian communities who may not be able to fish anymore.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	14, 33-34	Reference is made in the project descriptions stating the need for coordination between different groups. But, there is no specific description of coordination that took place before. There is not much detail on coordination for the planning of the document (other than a brief summary in the Acknowledgements section). Each project description, on the other hand, has a section for implementation unders which the different govt'l entities are listed that would be involved in the project(s).	2

Mar-06	Malawi	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	vi, 33	Acknowledgements section: states that the plan was developed through consultations with many stakeholders, including vulnerable rural communities. NAPA Preparation Process: talks about the consultative process, whereby first consultative workshops were held to determine how to publicize the activities, and how to solicit input and feedback from all stakeholders - including rural communities. This section states that the participatory rural appraisal methodology was used, whereby the consultants were able to obtain communities' perceptions and participation.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	Y	26	Project 4: potential long-term outputs includes creating a legal framework related to climate change and potential disasters (this project focuses on drought and flloods, i.e. water accessibility).	2
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N/A		Landlocked nation.	0

Mar-06	Malawi	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	2, 3, 33	Plan states that the vulnerabilities were synthesized in relation to several int'l, national, and local development policies and strategies (these are listed in the NAPA). P.3 more clearly shows the relationship between the NAPA and two of the national policies that adress poverty and economic growth. P. 33 states again two national strategies: Vision 2020 and the Malawi Poverty Reduction Strategy Paper (MPRSP). Both of these strategies seek to address poverty in the nation. The NAPA was developed to focus on the "most vulnerable resource-poor rural communities."	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	14-32	Some project descriptions include a generic section on monitoring and evaluation. These are generic statements of "continuous" monitoring, and submission of mid-term and final monitoring reports, or financial reports. Others include more detail (i.e. Project 4, which states that monitoring will be done by various entities and that these will be done at different time periods). However, after each project, there is also a table that lists "objectively verifiable indicators of achievement." These are measureable items that can be identified to determine if the project has been "successful."	1
	Implementation strategies should be both short-term and long-term	Y	14-32	Project descriptions include short and long-term outcomes. Some are more detailed than others.	1
					15

Jul-07	Mali	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	13	A general statement is made as to the number of people (as of 1998) and the percentage - 73.2% that live in rural areas.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	20-	P.20 begins explaining the vulnerabilities faced in the nation. In addition to explanations, maps are included that show trends and projections in rainfall. Vulnerabilities are then explained by sector (ag, forestry, soils, health, and infrastructure.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0
	Protect water sources to ensure water quality and quantity	Y	61, 68	Project8: will help increase access to water by creating boreholes that are equipped with solar pumps or wind turbines. Project11: seeks to master the use of runoff water - with hopes of it meeting the needs of people and cattle, increasing ag productivity, and contributing to the protection of the environment.	2

Jul-07	Mali	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	45, 49, 50, 52, 55, 57, 59, 63, 70, 78, 83	species that are better adapted to climate conditions. Proj2: encouraging & distributing new crop species to the communities, so that their harvests are better (due to crops that are more resistant). Proj3: diversification of sources of revenue. This project specifically addresses the needs of women and states the desire to provide them with other options for revenue (these sources include encouraging gardening, as well as micro-credit opportunities). Proj 4: provide other revenue options to those that rely heavily right now on fishing. Will also promote sustainable methods for managing waters and construct new ponds. Proj5: create storage banks of cereal, in order to ensure food security. Proj6: encourage the use of meteorology to help improve the country's ag production and contribute to the food security in the country. Proj7: construct small dams in order to provide for irrigated crops. Proj9: promote the use of butane gas and other renewable energy sources, in order to reduce the use of wood for energy (resulting in preserved forests and more environmentally friendly methods). Proj12: Migration within the country as well as the simple presence of humans in certain areas has made the preservation and sustainable use of natural resources a challenge. This project's main focus is to educate the communities on a sustainable use of resources. Proj 16: promote & educate pop on climate change & possible adaption actions. Proj18: promote the use of Jatropha oil (which has many possible uses: calibration of motors in grain mills, fabrication of soap), an oil that has not been used much but has many	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	89	Explains the type of support given by the government: establishing the national coordination team; coordinating with local communities; establishing the pilot committee; providing with staff available to assist; establishing the expert committee.	2

Jul-07	Mali	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	21, 38, 89	P.21 begins explaining how the process began with the identification of priority sectors (this was done through two days of consultations with various representatives from different groups). P.38 explains that the identification of possible adaptation methods was done through a participatory process that was organized by NGOs. The report states that this had a very positive result because the NGOs already worked with the communities. P. 89 explains the various consultation steps that took place. (a workshop kicking off the project, workshops informing of adaptation generally, a workshop to determine priority criteria to be used as well as to determine the projects; the dissemination of the NAPA).	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	72, 74	project13: Currently, the country suffers a lot from brush fires that are posing a threat to the country's forests. This project will therefore be an active fight against brush fires, starting with the creation of local brigades, and informing the communities on how to respond. Project14: will help rehabilitate degraded areas through various means - anti-erosion techniques, reforesting, dunes, etc. (some of these actions were for ag production, while others did reference the importance of ecosystem preservation).	2
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A=Landlocked country	0

Jul-07	Mali	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	6, 33	In the summary, the document states that the NAPA was created to be in conformity with the orientation of the Strategic Framework for Growth and Poverty Reduction, as well as the Strategy for Rural Development. P.33 explains exactly how the Strategy Framework for Growth and Poverty Reduction is linked to the NAPA (cites a specific statement)	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	45	Project descriptions include a list of indicators that will be used to measure the success of the project. Furthermore, there is a section that explains the methods for conducting the evaluation/monitoring. This section includes a statement about monitoring occurring half-way through the project, as well as at the end.	2
	Implementation strategies should be both short-term and long-term	N	45	Project descriptions do not include short- and long-term strategies (at least not identified as such) and also do not include a list of long-term outcomes.	0
					17

Nov-04	Mauritania	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N	74	23: state that one of the major obstacles of another national plan has been that there was no knowledge of the resources (stating the need for research, training, and information); 74, reference is made to the need to protect endangered fish species but no actual list or statement of a list is given	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	8	Includes a paragraph with population densities and percentages (22% of the country's entire population lives in less than 1% of the country's surface area - along the Atlantic coastline).	2
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	8,9, 11, 14, 16	References are made to reductions in rainfall, etc., but exact figures are not stated that quantify the changes.	1
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	52	(state institutional reinforcement of the structure responsible for nature conservation - no specific reference to corridors however)	1
	Protect water sources to ensure water quality and quantity	Y	30, 31, 35, 58, 59, 60, 62, 64, 65, 67	Includes dam construction; proposed projects include: promotion of water-saving techniques in oasis zones; better knowledge of the regimes of surface waters for 20 ponds; water dropping technology; improvement of underground waters management in the Aftout zone	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	26, 30, 35, 43, 44, 46, 51, 54, 73	Projects include the training and information of Socio-Professional Organizations and Community Educators; promotion and development of domestic poultry farming; improvement of farming techniques in pluvial zones	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	6, 20, 43	Projects list "administrative arrangements," where the different agencies responsible for carrying out the activities are identified. There is a general statement that the local community was contacted, but not much detail on how this was carried out	1
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	6, 20, 32, 41	Not local community or indigenous; there is one short section stating that after experts had done an initial investigation, this was presented to all stakeholders (including the public sector), the plan was presented to the public for ratification	1
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N	52	See above under 52	0

Nov-04	Mauritania	Present	Page(s)	Notes	Weight
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	19, 20	Give an explanation of the various policies and how they are related to the NAPA process and goal.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	35, 47, 48	mention of monitoring and assessment techniques (no mention of timelines for the first several projects, then kind of half-way, reference to specific timelines was stated, though, again, not for all the projects; the actual monitoring methods are not always very detailed)	1
	Implementation strategies should be both short-term and long-term	N		No specific reference to strategies being implemented in the short- or long-term	0
					13

Dec-07	Mozambique	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N		Project 3 includes an activity that would actually inventory the species of vegetation	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	9	States that there were 16.9 million people in 1997. Out of that, density was 23 people per square km in the northern region, 20 in the central region, and 14.4 in the southern region. 73% reside in the rural area (Project 3 states that about 60% of the pop. resides in the coastal zone).	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	1,2, 7, 8, 16-25, 26	Statement that the government commits to mapping zones of high risk, strengthen early warning systems through collecting timely info to predict locations of impact zones, establish a database for data and info on climate change trends and impacts. States that avg precipitation varies from 400 mm in one province to 2,000 in another. State the regions that are most vulnerable to droughts, and includes a map (17) that shows the areas most vulnerable to drought as well as a table (18) that lists the provinces and districts most vulnerable and the causes for desertification. Includes a map (21) of flood prone areas, of cyclone prone areas (23). Project 1: strengthening of an early warning system would help develop the local and regional impact projections	2

Dec-07	Mozambique	Present	Page(s)	Notes	Weight
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	58	Project 3 includes a long-term result of developing strategic plans that would have positive impacts on biodiversity (does not state that this would be through corridor preservation). Project 4 has one of its long-term results that of protecting biodiversity within the main river basins (through control of water pollution)	1
	Protect water sources to ensure water quality and quantity	Y	35, 46, 52	Project 2 includes building infrastructure to collect and conserve rain water; drilling of wells; installing small scale sustainable irrigation systems. Project 3 includes adopting local strategic plans that would address water availability. Project 4: Management of Water Resources Under Climate Change (protecting the quality of the river waters)	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	28, 34	p. 3 states that one of the objectives of the NAPA is to strengthen the capacities of family farmers to deal with the effects of climate change. Project 1: would entail training technicians and others to collect data from standardized stations. Project 2: would develop capacities in the ag producers to deal with climate change and variability.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	2	State the different entities that came together to work on the development of the NAPA.	1

Dec-07	Mozambique	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	11	State that a NAPA team held a participative evaluation process, where 621 people were interviewed at a national level. Out of those 621, 28% were from gov't institutions and NGOs, 29% community leaders, and 43% members of the community. Includes a map p.12 that shows the districts where the participatory process was undergone. State that the community was also consulted to approve of the criteria to determine priorities.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N		No specific reference to habitat corridors (see above)	0
	Policies that take into consideration water access and quality, while allowing for flexibility	Y		Refer to a national policy established in 1995 - the National Water Policy (p. 53)	1
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y	29, 48	In participatory process, one of the strategies mentioned by the people was to resettle people in areas not prone to floods; as well as sensitisation of people to build houses in places not vulnerable to drought and other extreme events. Project 1 includes resettling crowded pops from flood and cyclone prone areas. Project 3 includes training people to be sensitive to the effects of erosion and other aspects affecting the coastal zone.	2
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	v, 1	Exec Summary refers to relevant strategies, including the govt's five year plan and the PARPA (Action Plan for the Reduction of Absolute Poverty).	1

Dec-07	Mozambique	Present	Page(s)	Notes	Weight
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	N		Project 1 does not include monitoring methods or timelines.	0
	Implementation strategies should be both short-term and long-term	Y	26-59	Projects include detailed strategy lists for each of the long-term results. These include actions that will begin at the start of the project and others that will take place later in the process. Project 2: goes into further detail, actually stating the provinces that will go through Phase I for the project.	2
					17

Aug-06	Republic of Niger	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	Y	11	Does not list the database, but it does state the number of flora species (1,600), as well as the number of wildlife species (3,200), of which 168 are mammals, 512 are birds, 150 are reptiles and amphibians, 112 are fish species. (It cites the source as SNPA/DB, 1998)	1
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y		p. 12 states the pop of the country (11,060,291), and says that the majority live in the southern strip of the country, but it does not give any more numbers. Project 3 states that 85% of the population live in rural areas.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	16, 18, 26, 50	P. 10 includes a list of the four climatic zones observed in the country, as well as a map of these zones. Pgs. 13-15 list the effects of climate change on various sectors, identifying their vulnerabilities. These, however, are not broken down into local or regional vulnerabilities (just vulnerabilities overall for the nation). P. 16 includes a chart that shows climate variability observed nationally during the last 30 years. P. 18 makes reference to a climate change model for the study of future climate changes. This page also includes a map that shows variation in normal rainfall (by region). P. 26 shows a map of the most vulnerable areas to variability and climate changes. Project 8 is the development and dissemination of meteorological data, with the purpose of improving food security.	1

Aug-06	Republic of Niger	Present	Page(s)	Notes	Weight
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N		p. 11 states that the mammal wildlife in Niger is decreasing due to human causes (including habitat destruction) and natural causes. None of the projects, however, specifically addresses this threat.	0
	Protect water sources to ensure water quality and quantity	Y	35, 47, 65	Project 3: restores basins for crop irrigation. Project 7: includes the control of surface water and better mobilization of underground waters in order to provide better amounts for ag. Project 13: protection of riversides and restoration of silted up ponds in order to protect water quality	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	30, 38, 41, 68	Project 1: introducing fodder crops species trains communities in better practices. Project 4: encourages the diversification of crops and intensification of crop irrigation. Project 5: promotion of peri-urban market gardening and cattle breeding. Project 14 trains rural producers in order to deal with the adverse effects of climate change.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	72	Projects show evidence of coordination between different levels of government for the implementation of the projects (those that would need to be involved. NAPA development process includes more information how the government was involved and the various levels in which it was involved (ministries, supported by the local running committee).	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	71	The national consultation process is explained as having several committees and then having done consultation with four "concentric circles." These circles include women, producers & peasants, NGOs & Associations, and Media.	2

Aug-06	Republic of Niger	Present	Page(s)	Notes	Weight
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	Y		Make reference to current policy, but not to any that would come as a result of the NAPA	1
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A = landlocked country	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	7, 21-22	Exec Summary makes reference to a Poverty Reduction Strategy within the Rural Development Strategy. P. 21 refers to several measures that have taken place: including the formulation of the National Strategy and Action Plan for Climate Changes and Variability. P. 22 refers again to the PRSP. Whenever a NAPA project has specific connection with another national strategy or policy, the connection is stated within the description of the project.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	31	Project descriptions include monitoring/evaluation indicators and a monitoring mechanism that includes a brief identification of when monitoring will take place.	2
	Implementation strategies should be both short-term and long-term	N	30	Projects do not specifically list short- and long-term strategies or results.	0
					16

Dec-06	Rwanda	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	17	States the current population and the percentage from those that live in urban areas. No more details.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	24-28, 29, 36-40	Section in the report shows various climate variabilities (pointing to the vulnerabilities faced by the nation): in pluviometry, length of rainy seasons, temperatures, average monthly levels of Lake Kivu. P. 29 states specific incideces where there were floods or droughts that affected certain regions of the country. P. 36 includes a map that shows three regions that are most at risk of drought. P. 37 includes a map that shows regions most at risk of floods. P. 38 includes a table that inventories negative effects of climate change per most vulnerable regions. P. 39 expands this data to show the consequences of these climate hazards.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0
	Protect water sources to ensure water quality and quantity	Y	48, 50, 58, 66	Priority No 1: integrated water resources management (with aim at reducing vulnerabilities of ecosystems and populations due to quantitative and qualitatitve shortage of water resources). Project 1 protects and conserves lands and infrastructures agains erosion, landslides and frequent floods to reinforce and support water protection. Project4: implement measures of storage and water conservation in districts of vulnerable regions.	2

Dec-06	Rwanda	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	48, 52, 53, 54, 69	Priority 3: promotion of income generating activities (to improve the adaptation capacity of rural population vulnerable to climate change through the promotion of income-generating non-ag activities). Project 4: promotes intense agri-pastoral activities. Project 5: introduces species adapted to environmental conditions (improving the adaptation capacity of farmers). Project 5: reinforces professional capacities through creation of ag and non-ag employments.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	15	Evidence of coordination from the establishment of the National Committee on Climate Change, where representatives from various ministries participated.	1
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	7, 15	Summary of the report states that not only were national experts consulted in its development, but also several other community actors (including women and youth). List of vulnerabilities was developed from consultations with the local communities.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	N		Refer to strategies and include projects that promote water conservation but no policies	0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A Landlocked	0

Dec-06	Rwanda	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	15, 19, 49	Method of preparation of the NAPA states that several references were made to the Poverty Reduction Strategy Paper. Reference and explanation is also provided concerning the national policy of managing disasters, irrigated agricultures, the cultivation of rice in swamps and shallow areas, giving at least one cow of improved race per household, annual programmes of reforestation and fight against erosion. Table on p. 49 lists the six priority projects and includes a column showing integration with specific policies or strategies.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	50-	Project descriptions include a column that shows indicators of success. But there are no specific timelines. Agency(ies) are listed that show who would be responsible for monitoring or when it would be completed.	1
	Implementation strategies should be both short-term and long-term	N	50-	Project descriptions include their aim, objectives, expected results, and inputs, but does not break up the implementation strategies or outputs by short- and long-term	0
					13

Dec-06	Sao Tome and Principe	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	11	General statement giving the population in 2001 and saying that the pop predominantly lives in urban areas.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	11, 27	States the vulnerabilities faced in the islands, as identified by consultants. Some of these are very general, while others are specific to regions in the islands. In addition to stating vulnerabilities related to the whole country, a section follows listing vulnerabilities found in two sectors: health and agriculture. P.27 lists the various vulnerabilities faced by the country (as obtained through community consultations). Some of these are listed to show where they are occurring and would be occurring.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0
	Protect water sources to ensure water quality and quantity	Y	62	Project: Construction of two systems of drinking water supply in rural zones (to ensure access and quality of water). Project:Evaluation and planning the hydro resources will install hydro-metric equipment to improve quality and data available on water in order to better manage it.	2

Dec-06	Sao Tome and Principe	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	50, 53, 54, 56, 57, 59, 64, 65, 66, 67, 73	that will provide a new workforce practice. Proj: integrated project of livestock development would train communities to raise goats, which are more resistant to climate change conditions (specifically to drought). Proj: reinforcement & diversification of agricultural production (will train communities in different agricultural methods that are better practices for climate change). Proj: training medical personnel - doctors, nurses, volunteers, & others to be able to respond to possible natural disasters that are more likely to occur as a result of climate change.Proj: communication action for behavior change - train the community on better personal and environmental hygiene in order to reduce possible spread of disease that is exacerbated by climate change. Proj: GIS - integrate the use of GIS in order to map malaria and other health breakouts in the country, as a result of climate change effects, in order to better manage the breakouts. Proj: Introduction of new technologies for firewood use - will encourage the use of new technologies in order to reduce the amount of forest wood used for energy; will also construct improved stoves. Proj: sustainable management of water and energy in general seeks to encourage better use of available resources. Proj: Construction of two hydro power-stations - will encourage change to energy from hydro-power. Proj: introduction of renewable energies (seeks to introduce the use of solar, wind and biomass as alternative forms of energy). Proj: train and readapt project of the new navigation technologies and fishing equipment for fishermen (will train fishermen to improve their capacity in order to minimize the effects	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	48-74	The various projects all show that coordination will be needed between NGOs, different levels of government, the local communities, and other entities.	1

Dec-06	Sao Tome and Principe	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	25, 31	Methodology explains that two technical teams were established: one of consultants/experts and the other of personnel of local communities ("deep experts of their problems"). Further discussion states that the evaulation of vulnerability aspects of the country were consulted through interviews and enquiries of the populations living in these vulnerable areas.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	52	Project: sustainable management of forest resources - will seek to preserve the forest ecosystems of the nation.	1
	Policies that take into consideration water access and quality, while allowing for flexibility	Y	62	Project: Evaluation and planning the hydro resources - entails action that would elaborate legislation related to water management.	2
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y	48, 69	p.13 lists the different vulnerabilities identified by consultants. One of those listed is "destruction of houses where the families of the fishermen live as a result of sea level rise." Project1: will address displaced communities, as a result of floods and/or sea level rise. It will provide for the relocation of communities and provision of new houses in areas that are away from vulnerable spots. Project: construction of infrastructures for protection of vulnerable communities (will seek to involve target groups in the coast in the preservation and treatment of spaces; lock or reduce the progress of the degradation of the coast; improve the areas for embarkation; build bridges for fishing fleets).	2

Dec-06	Sao Tome and Principe	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	11	Reference is made to several national policies: The National Plan of Environment and Sustainable Development (1997), Report on Persistent Organic Pollutants (2003), The National Profile of Chemical Substances (2005), and The National Strategy for Biodiversity.	1
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	48, 50	Project1: did not state monitoring methods or monitoring timelines. However, other projects do include indicators to be used for monitoring (still no timelines).	1
	Implementation strategies should be both short-term and long-term	Y	48, 56	Project1: did not include clearly delineated short- and long-term strategies. Some of the other projects, however, do include long-term strategies and effects.	1
					18

November, 2006	Senegal	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	7	A chart on p.7 shows that of the 2003 pop. Of 10,165,314, 45.1% are urban.	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	14-34	Studies on the vulnerability of Senegal started in 1998 and was focused on three areas: water resources, ag, and coastal zone. These results are listed in the NAPA. For water, the studies broke down trends into three phases. These are described, showing the change that has occurred throughout the last 50 years or so, as well as projections.In the section describing the ag sector, a map is included that displays the country classified based on the ag products raised in each section. This section also states that as a result of the climate changes already experienced, the species richness has been reduced by 30%. The coastal zone vulnerabilities are further classified into five: floods, coastal erosion, salinization of water and soil, degradation of mangroves, and the variations in sea life resources. Section includes maps of areas most vulnerable, as well as a table that lists the various coastal zones and their vulnerabilities. After each section, possible adaptation measures are listed (not the actual projects selected). After all three areas and their vulnerabilities are explained, a detailed table is presented that lists the zones of the country, and then lists the vulnerabilities in the three areas that the specific zone will face, followed by another table that lists the zones and the adaptation options for each of the focus areas.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0

November, 2006	Senegal	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	50	Program 2: Rational use of water. Goal of the project is to optimize water potential by better protection and use of water sources. Aims to recharge water tables, also restore humid ecosystems and protect the environment, protect the coastal zones from "invasion" by sea water.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	43, 50, 60	Program 1: develop agro-forestry sector. One of the activities within this sector includes funds to encourage micro-credit (specifically for women), as well as teaching the community generally about different ag and cultivation methods and encouraging the population to participate more as a community. Program 2: also seeks to train the community so they are better adapted to the adverse effects of climate change. An additional activity under Program 2 is to train people on a new system of irrigation "family dropping system" where the system has a pressure of zero. Program 3: includes educating the community on the dangers of taking coastal sand for construction and informing them of other possible sources for construction. Program 4: Sensitivity Creation and Education of the Public to inform them of the effects of climate change and possible actions they can take to adapt.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	11	Once the vulnerabilities were identified through studies, the experts and oversight committee took these results to the community. The meetings where these results were presented were organized and attended by the governor of the region.	2

November, 2006	Senegal	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	10, 11	P.10 shows an outline of the steps taken to develop the NAPA. A few of those steps include community participation. After the committee with oversight for the project selected experts to determine vulnerabilities in three sectors (ag, water and coastal zones), they went out to the community to present their findings.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	43, 50	Program 1: Develop agro-forestry sector. Several activities are listed, including specifically creating community forests, support for research on forestry to improve the condition of the forests and identify species that could adapt to the changes. Project 1 also includes training people of new cultivation methods that would prevent the destruction of mangroves. Program 3: mentions the degradation faced by coastal ecosystems and includes the planting of fileo trees. Also includes activities to protect the mangroves (including training the community on different methods and sources to gather wood). Also includes the creation and fixation of dunes.	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0

November, 2006	Senegal	Present	Page(s)	Notes	Weight
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y	23, 27, 55	that erosion along the coast is further aggravated and of concern because of the continued development of permanent structures along the coast. In the vulnerability section of the report, under coastal zones, several adaptation options are listed. The most important ones identified for coastal zones are all linked to legal measures. These include, redefining the notion of what is acceptable development along the coast (rezoning), creating new laws and enforcing them, creating a law of the coast, and the establishment of a body that would have oversight. Program 3: Protection of the Coastline. Refers to the coastal erosion being experienced already and how that translates into destruction of homes and infrastructure. Activities include studying the possibility of beach renourishment, planting of coastal trees, dykes. Specifically, it is stated that several policy changes need to take place: redefining what the public domain entails (rezoning to prevent development), create and enforce additional law. In communicating the the community, it is stated that they will need to let them know and implement a policy that will prevent additional construction/development in coastal zones that are not already developed. Sensitizing the coastal community to the effects of populations along the	1
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	10, 12, 35-37	In the outline stated of the steps taken to develop the NAPA, the 7th stage is that of seeing and showing how the proposed projects align with strategic national programmes. P.12 refers to the actual policies that the projects were measured against (Strategic Document to Reduce Poverty, Millenium Development Goals, Sectoral Policy for the Environment, etc.). Pp. 35-37 further state these policies/strategies and explains how they are related to the protection of the environment and to the climate change adaptations, specifically.	2

November, 2006	Senegal	Present	Page(s)	Notes	Weight
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	61	A general explanation of the monitoring of the programs and projects is included. This section states that an oversight committee will be created composed of representatives from various governmental ministries, NGOs, local organizations. This oversight committee will be responsible to ensure that the program/project is meeting the established program indicators of success, and an accompanying report will be submitted at each period of evaluation (no specific period or timeline is mentioned).	1
	Implementation strategies should be both short-term and long-term	N	43	Strategies are simply listed and not specifically broken down as short- and long-term strategies. Some of the budgets do have annual costs, that show that the projects will take a couple of years, but no specific breakdown of which will occur when.	0
					16

Dec-07	Sierra Leone	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N	12, 76	A paragraph states several species that will be threatened with a loss of the beach. It is not, however, a database per se. P. 14 states that the nation is home to numerous biological populations, both plants and animals. However, it states that there is insufficient baseline information on these resources. Project 6: states that a database of natural resources will be developed. Project 14: states research to be conducted on the fish species to determine habitat ad species characteristic data.	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	3	Gives a broad description of the population by location (the total and then the percentage in rural vs. urban areas).	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	5-9, 19-20, 24, 34, 94	NAPA includes a statement of the general temp and precipitation rates currently, but also includes projected climate change scenarios (using various models). These scenarios are not at a local level, but a national level. States a summary of the different types of hazards posed by climate and climate change. Some of these make reference to specific regions of the country. There is no specific quantifiable data. P. 24 lists the hazards, occurrences, impacts, vulnerable areas of the country, and vulnerable sectors. Project 1: establishment of an early warning system (through monitoring of climate and weather systems). Project 20: will create a system to observe sea level activities in the nation to be able to make projections.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0

Dec-07	Sierra Leone	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	54, 68, 71, 73, 98, 105	Project 7: includes establishment of irrigation systems to ensure availability of water. Project 11: strengthening of the water sector. Project 12: seeks to provide better access to water by reducing incidences of leakages in the current water system as well as developing new pump designs for water extraction. Project 13: promotes rain water harvesting (resulting in the capturing and storing of water). Project 22: will develop appropriate water and sanitation projects to ensure water quality. Project 24: includes monitoring, evaluation and control of water activities in the capital.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	34, 40, 46, 54, 58, 68, 88, 96	Project 1: would train weather observers and weather forecasters. Project 3: training of new personnel for the country as meteorologists. Project 5: development of inland valley swamps for rice production. Project 7: also includes the training of communities to know how to use the irrigation systems. Project 8: promotion of renewable energies sector, to include training attendants in renewable energy. Project 11: will train individuals in the monitoring of water related impacts in relation to climate change. Project 18: includes training youth in tree nursery development and management (as part of the coastal management program). Project 21: encourages better practice of using mosquito nets to prevent being infected with diseases.	2

Dec-07	Sierra Leone	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	v, 22	List of Major Stakeholders includes various national governmental ministries, as well as provincial secretaries, mayor, chiefs. There is also reference to the private sector and NGOs, several schools, the police, and others. Section explaining how the NAPA was developed shows that first a steering committee was formed, made up of sector experts; these then consulted various groups around the country (including community leaders and gov't authorities, special interest groups such as NGOs, CBOs, etc.)	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	ii, 21-23	Foreword states that studies were conducted throughout the country to obtain info on poor people's experiences with disasters. Section on how the NAPA was developed includes a statement that it was a participatory approach followed by explanation that four consultative workshops were held throughout the country. It also lists the purposes of these workshops	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	15, 61, 64, 79	P. 15 states that one of the goals established is that of an increase to the land area protected to increase biological diversity (no specific reference to corridors). Project 6 promotes protection of managed areas (no specific reference to corridors). Project 9: promotes the protection of forest lands (though no specific reference to corridors). Project 10: also promotes protection of mainly wetlands. Project 15: delineate and restore vulnerable habitats and ecosystems.	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N		No actual policies stated, just strategies and projects	0

Dec-07	Sierra Leone	Present	Page(s)	Notes	Weight
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	Y	95	Project 20: includes the construction of jetties and piers	1
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	xiii, 15-16	Exec Summary makes reference to various strategies, programs and policies which were consulted in the preparation of the NAPA. Plan includes a section where the national policy on poverty reduction and other national development priorities are explained to show how they are related to the NAPA.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	N	34-100	Project descriptions have a section for monitoring and evaluation, but they are generic - stating that the project will be monitored by "competent agencies" and that a list of criteria will be developed to evaluate. Some projects do list the agencies that will monitor and even state that it will be done on a monthly basis, but it does not state what will be measured and is not detailed.	0
	Implementation strategies should be both short-term and long-term	Y	34-100	Project descriptions include short- and long-term outcomes. Some of the projects include budgets that are broken down into costs spread throughout years.	2
					17

Jul-07	Sudan	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	1	Introduction gives a brief understanding of the population, giving the total national pop, as population density figures based on the type of land (63 people per square km in arable land and 370 people per square km in cultivated land).	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	3, 4-6	Introduction includes a map showing drought risk in Sudan. Framework section breaks down what future climate change is expected to produce in the country (in terms of drought, flooding). This section includes a table showing the type of weather and climate event, its expected occurrence, the vulnerable areas and the sectors and impacts it will have. Furthermore, reference is made to scenario results from software applications.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	36	Project 4: environmental conservation and biodiversity restoration (through rehabilitation of vegetation cover and restoration of biological diversity to reduce the vulnerability of livestock following increased temperatures).	1
	Protect water sources to ensure water quality and quantity	Y	27, 30, 38	Project 1: enhancing resilience to increasing rainfall variability through the introduction of widespread and suitable water harvesting (and storage) techniques. Project 2: enhancing the resilience of local communities in the drought-prone areas through water harvesting measures. Project 5: proposes to promote sustainable livelihoods through the establishment of two micro-catchments with capacity to hold 10,000-15,000 cubic liters of water.	2

Jul-07	Sudan	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	33, 37, 38	Project 3: improving sustainable ag practices under increasing heat-stress in the River Nile State (through improvement of ag system practices, maximizing the utilization of flood water for irrigation of more ag lands in order to reduce the food gape, and increasing ag production and provision of solutions for socio-economic and security problems (will all be done through the intro of heat resistant plant varieties and intensification of growing season and diversification of grown crops, intro of new economic crops, increase the cultivated area particularly in terrace area through improvement of irrigation, digging; training and improvement of abilities of farmers through establishment of demonstration farms in order to raise awareness regarding how to act when conditions changed; establishment of rocky barriers to reduce wind speed and intensification of tree planting in villages and towns along irrigation channels). Project 4: also includes training of local people to manage their natural resources. Project 5: includes introduction of irrigation systems for pasture improement and grazing management, extension programmes for proper water management as well as plants and livestock husbandry.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	20	P. 16 and 17 states several gaps that need to be addressed to make sure that the NAPA recommendations can be implemented. These include addressing the lack of coordination at all levels, lack of sector-specific coordination, lack of stability of institutions (particularly in the water resource management sector). Process steps listed on p. 20, however, do show that there was coordination between different entities. The coordination resulted in different committees that worked together to come up with the NAPA. It is stated that a national committee first developed a report, which was then reviewed by local experts.	1

Jul-07	Sudan	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	12, 13-15, 17, 18-19, 21-23	Refers to a process that sought to hear the concerns of the stakeholders in each of five ecological zones. Stakeholders that participated: rural heads of households, farmers, pastoralists, village sheiks, Gov't officials, academic researchers, NGOs, CBOs, community leaders, regional officials, women's groups, local teachers, and ag extension workers. Stakeholder grps came up with a total of 32 projects, which were then prioritized using criteria. Criteria used to rank the projects was based on stakeholder consultations. Through further consultations & ranking, 5 projects were identified. P. 17 states that stakeholder consultations revealed a number of actions and decisions that should be undertaken by relevant authorities, together with some policy reform suggestions. Pp. 18 and 19 then state recommendations offered for the sectors of water & agriculture, as well as health. P.21 illustrates the stakeholder consultative process in Sudan and states that 100s of people were involved at each of the three workshop states (these people represented farmers, pastoralists, women, national and int'l NGOs, gov't officials, students, women societies, university professors, etc. Prior to starting the actual consultation process, a three-day national training workshop was conducted to train the NAPA technical committee members and others at the technical level. Afterward, three levels of workshops took place: the first had the objective of building awareness and capacities as well as to enable stakeholder participation; the second level focused on participatory vulnerability assessment (stakeholders were key in identifying the vulnerability); the third level the development of evaluation criteria was essential for prioritizing and ranking the proposed adaptation initiatives.	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	36	Project 4: environmental conservation and biodiversity restoration (through rehabilitation of vegetation cover and restoration of biological diversity to reduce the vulnerability of livestock following increased temperatures).	1

Jul-07	Sudan	Present	Page(s)	Notes	Weight
	Policies that take into consideration water access and quality, while allowing for flexibility	Y		p. 16 states that the participants raised several concerns and the importance of identifying policy and institutional gaps. They stated the need to improve the link between national policymaking and adaptation (reference was made specifically to water policy). p. 18 states several recommendations made as a result of stakeholder consultations, as they apply to the water and agriculture sectors. One of the recommendations is that water resources laws be amended.	1
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	6	Reference is made to show how Sudan has been trying to incorporate climate change into sectoral and development policies. Environmental policies have been embodied into the 10- and 25-year Comprehensive National Strategies. These policies include the Poverty Reduction Strategy, Roll Back Malaria Programme, and the Water Harvesting programme.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	N	27-	Projects do not include a monitoring methods or timeline section explaining how the projects will be evaluated.	0
	Implementation strategies should be both short-term and long-term	Y	27-	The projects each state the near-term outcomes and include a budget with line-items and the costs expected to be incurred under each line-item for the duration of the project (this shows the short- and long-term implementation strategies, though there is not a narrative section on the long-term outcomes).	1
					16

Jan-07	Tanzania	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	Y	12	An actual database is not included, but an explanation of the different types of species is included (20 primate species and four endemic; 34 antelope species and 2 endemic; fish with many endemic species; 290 reptile species and 75 endemic; 40 endemic amphibians; and around 11,000 invertebrates and plant species. (one of the proposed activities was to develop a wildlife information database. However, this activity was ranked 4th within all the wildlife activities.)	1
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	42	Project 3: in the Rationale/Background, this project states that 15% of the country's land area is coastal region, and that approximately 25% of the pop. lives in this region (about 8 million).	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	5, 6-14, 15-19	v - statement in the Foreword that 21 meteorological stations in the country show a steady increase in temperature measurements in the 30 years prior to the publication of the report. Section in the report states the vulnerability to climate change and sectoral analysis. This part of the report states that the mean daily temp will rise by 3-5 degrees celcius and the mean annual temp by 2-4 degrees celcius. Pp. 6-14 show the vulnerabilities faced by various sectors in the country: agriculture, water, health, forestry & wetlands, energy, coastal & marine resources, wildlife, tourism, industry and others. Pp. 15-19 show additional trends in the national climate (temperature and rainfall patterns). These trends are explained in narrative and also through charts and maps.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N		p. 2 states that one of the objectives of the NAPA is to protect life and livelihoods of people . . . Biodiversity and environment. ***	0

Jan-07	Tanzania	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	40, 42	Project 2: has the objective of providing water and ensuring sustainable utilization of water in drought-stricken areas (includes ensuring that communities participate in conservation and management of catchment areas). Project 3: objective of constructing new water wells to enable people to have reliable access to safe and clean drinking water and for other development processes.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	38, 42, 45, 47, 49	Project 1: promotes the use of drought tolerant food crops in drought prone areas. Project 3: though main objective is to provide access to safe and clean drinking water, another activity is that of promoting alternative income-generating opportunities to reduce pressures on coastal resources. Project 4: main objective is to improve livelihoods of communities around Mt. Kilimanjaro by providing alternative sources of income and food through replanting of trees and economic diversification. Project 5: indirectly, this program will create opportunities for investment in alternative sources of livelihood through the establishment of a mini-hydro plant that would generate electricity so that the community does not have to solely rely on wood. Project 6 includes training of local medical practitioners on how to treat for malaria.	2

Jan-07	Tanzania	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	ix, 3, 51	Exec Summary states that the Vice President's Office will be the main custodian of the NAPA while the actual project activities will be implemented by relevant sectors and local communities. The process of developing the NAPA is described as entailing the establishment of a NAPA team that was multi-disciplinary and multi-sectoral. NAPA Process section at the end of the report shows that there was coordination headed from the Vice President's Office - Division of the Environment. The NAPA Team consisted of 20 member experts from different sectors, which were divided into four groups. The four groups consulted different sectors and stakeholders. Statement is made that it was difficult to do a community approach except for in the water and ag sectors because of the size of the country. The synthesis report was then presented for public consultation (through interviews and questionnaires including public officials in different ministries, industries, and communities).	2

Jan-07	Tanzania	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	viii, 2, 51	Exec Summary: states that several consultations were undertaken at national, regional and district levels that allowed for the identification of the most important adaptation techniques. Statement is also made that a number of consultations were done at the community level, especially with farmers to verify some of the information gathered from literature reviews. Public consultation took place in 13 districts and 52 villages (after the synthesis report was created).	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N	26, 36	In the table describing the country's vulnerabilities, current and potential adaptation activities, as potential activity is listed as "develop[ing] migratory corridors and buffer zones for wildlife species. Another possible adaptation activity is that of relocating people living in wildlife corridors. One of the activities ranked by stakeholders was to develop migratory corridors for wildlife species. However, this was ranked 5th out of the seven wildlife activities. Furthermore, under the tourism sector, there was an activity to relocate people living in wildlife corridors (this, however, was ranked last in the tourism priorities). ***	0
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0

Jan-07	Tanzania	Present	Page(s)	Notes	Weight
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N	29, 36-37	In the table describing the country's vulnerabilities, current and potential adaptation activities, as potential activity is listed as "relocation of vulnerable communities to other areas." As well the plan of sensitizing communities on the climate change related hazards; zoning planning; establishment of a disaster planning framework; improvement of building codes. Under the ranked activities for Coastal and Marine Resources, the relocation due to sea level rise of small island communities was ranked 4th out of 6 activities. On the other hand, relocation of vulnerable communities to other areas (under the human settlements sector) was ranked second only to establishing good land tenure system and facilitating sustainable human settlements. ***	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	3, 4-5	The document includes a statement that the NAPA complements other existing national programmes, including the National Strategy for Growth and Reduction of Poverty, Agricultural Sector Development Strategy, Rural Development Strategy, National Action Plan to Combat Desertification, and National Biological Diversity Strategy and Action Plan. A section of the plan explains in more detail the various policies and strategies that are already in place and that support the vision of the NAPA.	2

Jan-07	Tanzania	Present	Page(s)	Notes	Weight
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	N	38-50	Projects include a section titled: Institutional Arrangement, where an explanation is given on the agencies that will implement the project. However, there is no explanation given or reference made to the monitoring of the project. At the end of all the project descriptions, a paragraph in the implementation strategy section states that the Vice President's Office will be responsible for the monitoring and evaluation of the projects (along with other stakeholders). But no explanation is given on how this will be carried out or when.	0
	Implementation strategies should be both short-term and long-term	Y	38-50	Project descriptions include activities and budgets that are broken down by years and that show that there will be short- and long-term activities.	1
	***Out of the fourteen activities, none were related to protection or establishment of corridors, even though those were listed as possible adaptation methods. Additionally, the projects did not include relocation of people located in vulnerable areas or islands.				15

Sep-09	Togo	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	Y	20	P.20 lists a few species that are rare. These are not listed in a database format and do not list current numbers.	1
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	21, 39	The report states that around 66% of the population lives in the forested regions. Additionally, around 500,000 people live in the coastal region in "precarious households." It also states that around 70% of the country's economic activity is located along the coast.	2
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	11, 27, 34, 35-	P.11 gives a summary of the expected climate change effects. It also states a brief summary of some of the vulnerabilities faced by resources and sectors.The four sectors that are most vulnerable: agriculture, water resources, human establishments and health; the most vulnerable ecosystem is the coastal ecosystem. To begin to explain the projections, the NAPA first lists the current evolution that is being seen in climate and precipitation (from 1961-1985 and then from 1986-2005). P.34 shows the most vulnerable groups, listed by one of the five country zones. Starting in p.35, the actual climate change model results are presented, which show projections for the country of higher temperatures, and less rain. In addition to this information, vulnerabilities by sector are explained (for water resources, agriculture, cattle grazing, food security, forestry and biodiversity (stated that about 70% of the rural population uses plant medicine to treat illness, but that some of these species are at risk of extinction because of the potential loss of biodiversity and forests), coastal zones, human establishments and health.	2

Sep-09	Togo	Present	Page(s)	Notes	Weight
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	N			0
	Protect water sources to ensure water quality and quantity	Y	96, 102, 109	Project3: part of the goal of the project is to protect the freshwater supply from saltwater infiltration. Project5: will promote better water management techniques (through irrigation), as well as promote the better mobilization of underground water. Project 7: will seek to improve access to water by improving the mastery of water gathering methods, as well as water hillside irrigation techniques.	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	88, 92, 100, 102, 105, 110	Project1: will contribute to the adaptation of the agricultural sector by providing climate information to ag workers (permitting them plan their activities for better crops). Project2: will put in place a system that will alert populations concerning floods; not only will this help prevent life loss, but it will also permit farmers to be better prepared and also reduce the chance of crop loss. Project4: will inform populations on better practices to avoid diseases that are expected to be on the rise due to climate conditions that are favorable to their spread. Project5: will promote the development of smaller irrigation zones - to support small farmers and reinforce their growing capacities (by mastering their water management methods and encouraging a better mobilization of underground waters). Project6: will promomte revenue generating activities for fishers and ag workers (including improving their current equipment, establishing a market for fish, but also opening new credit lending institutions). Project7: will result in the training of technicians related to water gathering techniques and water management, in general.	2

Sep-09	Togo	Present	Page(s)	Notes	Weight
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	28, 60, 62	The two levels of participatory meetings (described below) show that there was coordination between local government and national government, as well as with other community members. P.60 states the participation of the government and their level of involvement: establishing the pilot committee for the project, establishing the National Coordinating Unit, encouraging local areas through their coordination, and providing support personnel. P.62 gives more detail on the institutional arrangements that took place to coordinate the NAPA process (showed coordination between groups and government).	2
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	2, 28, 60-61	The Preface explains that the various steps taken to come up with the NAPA were all participatory. This included input from technical staff, civil society, funders, etc. The participatory method was used at two levels: first, a serious of sessions were held in the five country regions (with representatives from the local governments, civil society, technical experts, etc.). The second was held at a national level that synthesized and validated the results and information from the local meetings. This meeting was conducted with reps from the different sectoral ministries and non-governmental orgs, as well as with members of the national pilot committee. Several national consultations took place to obtain input and participation to identify the vulnerable sectors (six workshops were held in each of the five regions of the country).	2

Sep-09	Togo	Present	Page(s)	Notes	Weight
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	Y	96	Project3: seeks to promote the preservation of the coastline: reducing the amount of erosion currently occurring, restoring the mangroves population, and stopping the pollution of freshwater by saltwater infiltration.	1
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N			0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	12, 42, 62	Preparation was said to integrate two other national plans: the Poverty Reduction Strategy Document and another development strategy. Additional programs and policies in place in Togo are listed on p. 42. Not as detailed as some other NAPAs have been in explaining how they are related specifically, and even how each project is related to the other programs.	1
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	89	P.63 - prior to the explanation of each project, states that the projects will be evaluated according to national procedures and financial partner requirements (with specific focus on the sustainability of the projects) - this is a general statement without any detail on what will be measured or what timeline to expect. However, the explanations of each project include a list of indicators that will be used to measure success as well as a list of the methods that will be used to monitor.	2
	Implementation strategies should be both short-term and long-term	Y	93	Some of the project descriptions show the order in which the activities will occur (thus showing both the short- and long-term strategies). This, however, is not universal to all projects.	1
					18

Dec-07	Uganda	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N	8	xiii - statement that Uganda is diverse and rich in biodiversity, but that exploitation of these resources has resulted in serious biodiversity loss, with some species close to extinction (no list of the species, however). P. 8 lists general numbers of species (over 1,000 of birds, 345 known mammals, 165 reptiles, 43 amphibians, 49 fish species, and 4900 of higher plans). This same page also says that Uganda is home to rare and endangered species, including the Mountain Gorilla (no actual database, however).	0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	2	A brief reference is made to the nation's population and the percentage that lives in rural areas (80%). The Urbanization rate is lowest in Uganda compared to other African countries.	1

Dec-07	Uganda	Present	Page(s)	Notes	Weight
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	xiv, 4, 21-39, 54	xiii - Exec Summary states that when developing the NAPA, they were limited with the amount of information that was available regarding climate change. A map on page xiv shows potential impiacts of temperature rise on coffee growing (what lands would and would not be suitable for its growth). P. 6 shows a map of mean annual rainfall and also explains the areas that receive the most rain vs. those that are more dry. P. 4 - talk about the different sectors of the country (health, climate, wildlife, forests) and how these have been and are being affected by climate change; showing the vulnerabilities. Pp. 21-39 show vulnerability by region in the nation. There are tables that show rainfall information for regions in the country. These show the vulnerability faced by regions for shortage of water as well as for flooding. Info is also included to show temperatures for regions, major impacts of disasters, and then vulnerability on various sectors (water resources, agriculture, food security, temp rise, pest and disease epidemic, biodiversity loss, soil fertility, crop yield, livestock production, water availability, health sector, forestry, wildlife). Project 3: includes creation of a meteorological system, which would help develop local and regional projections.	2
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y		Projects include tree planting to protect forests, but no specific reference made to habitat corridors or the protection of endangered species.	1

Dec-07	Uganda	Present	Page(s)	Notes	Weight
	Protect water sources to ensure water quality and quantity	Y	56, 57	Project 4: includes improving the safe water supply through construction of more protected water sources and gravity flow schemes; strengthening water quality surveillance. Project 5: develop and promote rainwater harvesting; simple and low cost irrigation technologies; construction and maintenance of dams; water reservoirs; promote best practices	2
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	53, 54, 59, 63, 65	Project 2: includes training community on agricultural and land use best practices. Project 3: will train individuals in the science of meteorology. Project 6: will train community in indigenous and appropriate food preservation technology. Project 8: includes training communities in integrated natural resources management. Project 9: includes training decision makers, planners and implementers on impacts of climate change.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	xvi, 15, 50	Exec Summary states that projects will be implemented by local institutions (including local gov'ts) and that this will be supervised by national-level gov't ministries. P. 15 shows the coordination that took place to produce the NAPA (participation took place starting from the national gov't, represented by the Ministry of Lands, Water and Environment, followed by a PRoject Steering Comm., and then a Project Mgt. Unit, and the NAPA team, and lastly, Task Forces. The Project Steering Committee had reps from various national ministries, NGOs, and reps from the UN. P. 50 states how the NAPA will be implemented (including detailed delineation of responsibilities).	2

Dec-07	Uganda	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	xv, xvi, 15, 18, 41, 45	Exec Summary refers to feedback received by the community and how their feedback was used as the basis for establishing the intervention areas. P.15 states that the Participatory Rural Appraisal (PRA) approach was used for collection of data/information from selected districts. Where necessary, groups were segregated by sex to ensure women's participation. Interviews were conducted and asked of selected respondents, including elderly women and men, opinion leaders, NGOs and CBOs. Focused group discussions were also organized (including youth). Data and other info was obtained as well from the district political leaders and technical officers. A section on "Identified Coping Strategies" is included in the report, in which they identify coping strategies that were revealed through the participatory rural sessions (activities that the communities have already been using). The report states that the coping strategies that are beneficial to the environment should be further encouraged. P. 45 shows the major categories for recommendations, as presented by the various respondents from surveys (%s are also included).	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N		Statement made on p. 7 that deforestation is the main environmental issue confronting Uganda's forests. Currently, the coverage of forests in Uganda is 24%, vs. 50% which was the coverage at the start of the 20th century.	0
	Policies that take into consideration water access and quality, while allowing for flexibility	Y	57, 65	Project 5: in order to improve the utilization of water resources among vulnerable communities, this project will also develop and enforce bylaws for water production. Project 9: generally involves the development of policy and laws that address climate change (which would include laws and policies related to water).	2

Dec-07	Uganda	Present	Page(s)	Notes	Weight
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N	56	Project 4: includes relocating communities to safer areas/districts (although Uganda is a landlocked country).	0
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	vii, xii-xiii, 3	Foreword refers to efforts already being taken by the gov't through certain policies: Poverty Eradication Action Plan (PEAP), Plan for Modernization of Agriculture (PMA), Universal Primary Education and Primary Health Care. Exec Summary gives a little more detail about the PEAP and PMA policies. These two policies, in particular, are further described on pg. 3.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	52-	Project 1 states the importance of monitoring and evaluation, yet it is still vague. It simply states that implementation will be a joint activity; that the logical framework approach will be adopted to monitor the project. Yet it does not say who exactly will be responsible and when these monitoring activities will take place. The other project descriptions all include a similar and generic statement: project will be evaluated every two years by a tripartite constituted of the gov't and relevant development partners. Project mgt will produce regular reports in accordance with the laid down monitoring plan of the project. These statements are generic and not detailed to guide monitoring. They do not list the indicators that will show "success" of the project.	1
	Implementation strategies should be both short-term and long-term	Y	52-	Project descriptions include activities that are short- and long-term, as well as lists short- and long-term outcomes from each of the projects.	2
					19

Sep-07	Zambia	Present	Page(s)	Notes	Weight
Fact Base	Database listing threatened species	N			0
	Fact base identifying numbers of population by location (i.e. along the coast, rivers, etc.)	Y	1	Gives a general statement of the total population (9.8 million) and the percentage that live in urgan areas (39.2%).	1
	Develop local and regional impact projections to determine vulnerabilities (local/regional precipitation patterns, coastal characteristics, etc.)	Y	v, 4-12, 47	Exec Summary shows that the country was divided into regions, which were then assessed for vulnerabilities. Ch.2 of the report includes a summary of hazards posed by climate variability for the country's three ecological regions (using a baseline and using projected scenarios). Detailed charts are included, as well as narratives explaining how these variable conditions will affect different sectors of the economy. Reference is made to using the Decision Support System for Agro-Technology Transfer (scenario software). Project 2: includes development of early warning systems (establishment of a National Climate Centre), which would provide local and regional baseline data to determine projections and vulnerabilities.	2

Sep-07	Zambia	Present	Page(s)	Notes	Weight
Goals & Objectives	Protect endangered and threatened species through preservation, protection, and establishment of habitat corridors	Y	51	p. 3 refers to the deforestation, wildlife depletion and land degradation (as well as other factors) that are all contributing to the loss of biodiversity. P. 22 lists the identified adaptation needs of the country. Number 28 is "identifying and protecting migratory routes of wildlife." These are not the actual projects that have been identified as most important. Project 5: promote natural regeneration of indigenous forests (to remove pressure from the Miombo forests, which currently face a lot of pressure from cutting for fuelwood). However, it is very vague in its description and there is no reference to corridors.	1
	Protect water sources to ensure water quality and quantity	Y	50, 54, 56, 57	Project 4: includes the identification of water bodies, which would result in better management practices for these bodies, ensuring water accessibility to communities. Project 7: maintenance and provision of water infrastructure to communities (very vague, however: does not include inputs to the project, only lists one each of short- and long-term outputs, and nothing under monitoring and evaluation). Project 9: capacity building for improved environmental health in rural areas includes ensuring that there is access to clean water supply systems. Project 10: aims to prevent outbreaks of water-borne diseases by protecting the water supply (flood-proofing sanitation facilities).	2

Sep-07	Zambia	Present	Page(s)	Notes	Weight
	Train communities in new workforce skills or better practices that incorporate readiness for climate change	Y	45, 47, 49, 52, 55	Project 1: will train communities on how to maintain and manage irrigation systems in the context of climate change, including variability. Will also give capacity training to farmers on water management practices. Project2: will train individuals in the climate data management system. Project 3: promotion of alternative sources of livelihoods to reduce vulnerability to climate change - it is a very vague project description, however. The only specific thing stated is that there will be funds to support microloan programs for women. Project 6: enhancement of people's capacity to adapt their land use practices. Project 8: the eradication of invasive alien species is listed as being a way to engage communities in activites that provide opportunities for alternative sources of livelihoods.	2
Inter-Organizational Coordination	Evidence of coordination between highest levels of government and local governments, as well as with community generally and private sector	Y	ix, 35	Acknowledgement section of the report states that the NAPA was developed through consultation and participation from key stakeholders, including senior gov't officers in key ministries and departments, representatives of NGOs, civil societies, academicians, the private sectors and vulnerable rural communities. P.35 shows how the NAPA teams were selected and established. This shows that there were several representatives from various governmental ministries and other groups.	2

Sep-07	Zambia	Present	Page(s)	Notes	Weight
	Evidence of stakeholder participation (to include representation by the community) in the development of goals and vision (indigenous input)	Y	vi, 13-15, 34, 35	Exec Summary makes reference to answers submitted by respondents. Section on Community Participatory Consultations gives an explanation on what was done to obtain community responses: focused group discussion, one-on-one household interviews, expert opinion and judgments. This same section gives a brief summary of what each of the consultations revealed (for example, it states that consultations about energy revealed that there is a need for sustainable management of water resources). Includes a section where current coping strategies (as being carried out by the community) are listed. P. 34 states that an assessment of the priority options was carried out where each option was weighed by a group of stakeholders at a national workshop. P.35 shows the different participants that were involved. It also shows the various members of the National Steering Committee (to include an alliance of women, environmental groups, and various ministry reps.).	2
Policies, Tools, & Strategies	Preserve & Promote habitat corridors	N			0
	Policies that take into consideration water access and quality, while allowing for flexibility	N			0
	Offering incentives or requiring individuals to move from the shoreline or develop structures that can adapt to rising sea level	N		N/A = landlocked country	0

Sep-07	Zambia	Present	Page(s)	Notes	Weight
	Adaptation policies refer to or are linked to existing national plans and programs, as well as international programs	Y	I, 23-25, 25-31	Foreword refers to several policies that the gov't has already put in place: National Disaster Mgt. Policy, as well as the Disaster Management and Mitigation Unit; furthermore, the government has created the Fifth National Development Plan. P.23 states the linkages of the NAPA to various national programs (also includes a table that lists these programs and the main focus of each): there are 20 policies total. P.25 starts another list of the existing programmes that can integrate climate change adaptation. It lists the programme, its objective, strategies, and relevance to NAPA.	2
Implementation	Clearly stated monitoring methods and timelines for monitoring progress and reassessing the situation	Y	37	A general statement is made after the section explaining how the NAPA was developed. This statement is subtitled: Monitoring and Evaluation. It states that the programmes will use the same monitoring and evaluation procedures as done for other GEF projects. It states that numerous stakeholders will be involved in the monitoring. Depending on the nature of the project, some will have detailed monitoring and evaluation plans. The plans will include annual monitoring, mid-term evaluation, baseline survey to establish pre-project activities values, review of lessons learned, and end of year report or terminal report.	1
	Implementation strategies should be both short-term and long-term	Y	38-50	Project descriptions include short- and long-term outcomes as well as different activities to take place during the length of the project. Some of these, however, are very vague.	1
					16

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